

SHARP SERVICE MANUAL

No. S5834CDC421H/

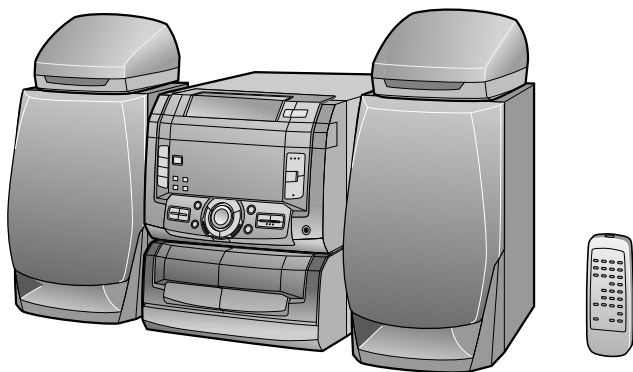


Illustration: CD-C421H

CD-C421H

CP-C421H and SURROUND
(GBOXS00018AWZZ)Constitute CD-C421H.

CD-C411H

CP-C411H Constitute CD-C411H.

- In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

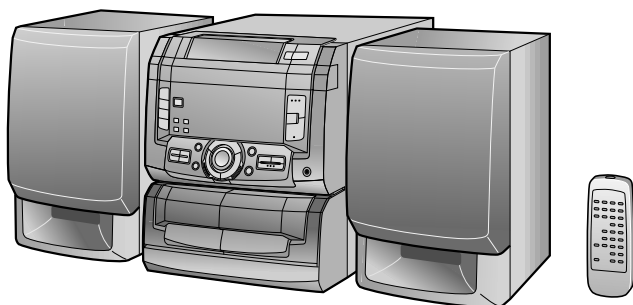


Illustration: CD-C411H

COMPACT
disc
DIGITAL AUDIO

R·D·SEON

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SAFETY PRECAUTION FOR SERVICE MANUAL

Precaution to be taken when replacing and servicing the Laser Pickup.

The AEL (Accessible Emission Level) of Laser Power Output for this model is specified to be lower than Class I Requirements. However, the following precautions must be observed during servicing to protect your eyes against exposure to the Laser beam

- (1) When the cabinet has been removed, the power is turned on without a compact disc, and the Pickup is on a position outer than the lead-in position, the Laser will light for several seconds to detect a disc. Do not look into the Pickup Lens.
- (2) The Laser Power Output of the Pickup inside the unit and replacement service parts have already been adjusted prior to shipping.
- (3) No adjustment to the Laser Power should be attempted when replacing or servicing the Pickup.
- (4) Under no circumstances look directly into the Pickup Lens at any time.
- (5) CAUTION - Use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Laser Diode Properties

Material: GaAlAs

Wavelength: 780 nm

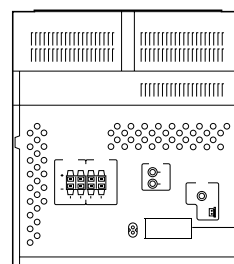
Emission Duration: continuous

Laser Output: max. 0.6 mW

VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

WARNING - OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN DENNA BRUKSANVISNING SPECIFICERAS. KANANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

(FOR GERMANY)

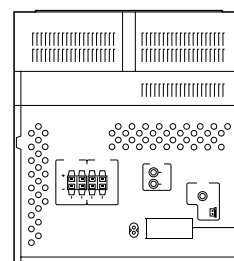


(Illustration:CD-C421H)

CLASS 1 LASER PRODUCT
APPAREIL À LASER DE CLASSE 1
PRODUCTO LASER DE CLASE 1

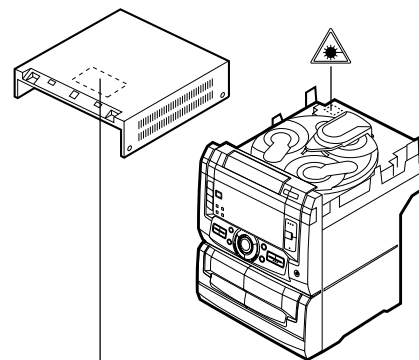
LASER KLASSE 1
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT
LASER TRÍDY 1
LASER TRIEDY 1

(FOR U.K.)



(Illustration:CD-C421H)

CLASS 1 LASER PRODUCT
APPAREIL À LASER DE CLASSE 1
PRODUCTO LASER DE CLASE 1



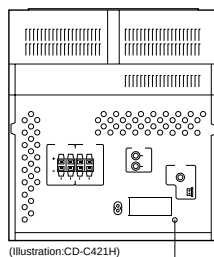
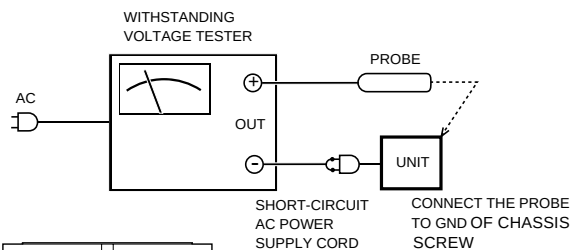
CAUTION-INVISIBLE LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.
VARNING-OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. STIRRA EJ IN I STRÅLEN OCH BETRÄKTA EJ STRÅLEN MED OPTISKA INSTRUMENT.
ADVERSEL-OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. STIRRA EJ IN I STRÅLEN ELLER SE MED OPTISKE INSTRUMENTER.
VARO! AVATTAESSA OLET ALTIIDIN NÄKYMÄTÖN LASERSÄTEILYLLE. ÄLÄ TUOTOA SÄTEESEEN ÄLÄKÄ KATSO SITÄ OPTISEN LAITTEEN LAPI.
VARNING-OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. STIRRA EJ IN I STRÅLEN OCH BETRÄKTA EJ STRÅLEN GENOM OPTISKT INSTRUMENT.
ADVERSEL-OSYNLIG LASERSTRÅLNING NÄR DENNET ÄPNES. STIRR IKKE INN I STRÅLEN ELLER SE DIRECTT MED OPTISKE INSTRUMENTER.

IMPORTANT SERVICE NOTES (U.K. Only)

Before returning the unit to the customer after completion of a repair or adjustment it is necessary for the following withstand voltage test to be applied to ensure the unit is safe for the customer to use.

Setting of Withstanding Voltage Tester and set.

Set name	set value
Withstanding Voltage Tester	
Test voltage	4,240 VPEAK 3,000 VRMS
Set time	6 secs
Set current(Cutoff current)	4 mA
Unit	
Judgment	
OK: The "GOOD" lamp lights.	
NG: The "NG" lamp lights and the buzzor sounds.	



(Illustration:CD-C421H)

CHASSIS SCREW

FOR A COMPLETE DESCRIPTION OF THE OPERATION OF THIS UNIT, PLEASE REFER TO THE OPERATION MANUAL.

SPECIFICATIONS

CD-C421H

● General

Power source: AC 230 V, 50 Hz
Power consumption: 47 W
Dimensions: Width; 270 mm (10-5/8")
 Height; 303 mm (11-13/16")
 Depth; 341 mm (13-7/16")
Weight: 4.8 kg (10.6 lbs.)

● Amplifier section

Output power: PMPO; 120 W (total)
(For Germany) MPO; 60 W (30 W + 30 W)
 (DIN 45 324)
 RMS; 40 W (20 W + 20 W)
 (DIN 45 324)
 RMS; 28 W (14 W + 14 W)
 (DIN 45 500)

Output power: MPO; 60 W (30 W + 30 W)
(For U.K.) (10% T.H.D.)
 RMS; 40 W (20 W + 20 W)
 (10% T.H.D.)
 RMS; 28 W (14 W + 14 W)
 (0.9% T.H.D.)

Output terminals: Front speakers; 5.4 ohms
 Surround speakers; 16 ohms
 Headphones; 16-50 ohms
 (recommended; 32 ohms)
Input terminals: Video/Auxiliary (audio signal);
 245 mV/47 kohms

● Tuner section

Frequency range: FM; 87.5-108 MHz
 AM; 522-1,620 kHz

● Cassette deck section

Frequency response: 50-14,000 Hz (Normal tape)
Signal/noise ratio: 55 dB (TAPE 1, playback)
 50 dB (TAPE 2, recording/
 playback)
Wow and flutter: 0.2 % (DIN 45 511)

● Compact disc player section

Type: 3-disc multi-play compact disc player
Signal readout: Non-contact, 3-beam semi-conductor laser pickup
D/A converter: 1-bit D/A converter
Frequency response: 20 - 20,000 Hz
Dynamic range: 90 dB (1 kHz)

● Front speaker section

Type: 2-way [10 cm (4") woofer and 5 cm (2") tweeter]
Maximum input power: 30 W
Impedance: 5.4 ohms
Dimensions: Width; 180 mm (7-1/8")
 Height; 300 mm (11-13/16")
 Depth; 204 mm (8-1/16")
Weight: 2.1 kg (4.6 lbs.)/each

● Surround speaker section

Type: 10 cm (4") full-range speaker
Maximum input power: 10 W
Impedance: 16 ohms
Dimensions: Width; 170 mm (6-11/16")
 Height; 120 mm (4-3/4")
 Depth; 175 mm (6-7/8")
Weight: 0.6 kg (1.3 lbs.)/each

CD-C411H

● General

Power source: AC 230 V, 50 Hz
Power consumption: 32 W
Dimensions: Width; 270 mm (10-5/8")
 Height; 303 mm (11-15/16")
 Depth; 341 mm (13-7/16")
Weight: 4.8 kg (10.5 lbs.)

● Amplifier section

Output power: PMPO; 66 W (total)
(For Germany) MPO; 33 W
 (16.5 W + 16.5 W)
 (DIN 45 324)
 RMS; 20 W (10 W + 10 W)
 (DIN 45 324)
 RMS; 16 W (8 W + 8 W)
 (DIN 45 500)

Output power: MPO; 33 W (16.5 W + 16.5 W)
(For U.K.) (10% T.H.D.)
 RMS; 20 W (10 W + 10 W)
 (10% T.H.D.)
 RMS; 16 W (8 W + 8 W)
 (0.9% T.H.D.)

Output terminals: Speakers; 8 ohms
 Headphones; 16-50 ohms
 (recommended; 32 ohms)
Input terminals: Video/Auxiliary (audio signal);
 245 mV/47 kohms

● Tuner section

Frequency range: FM; 87.5-108 MHz
 AM; 522-1,620 kHz

● Cassette deck section

Frequency response: 50-14,000 Hz (Normal tape)
Signal/noise ratio: 55 dB (TAPE 1, playback)
 50 dB (TAPE 2, recording/
 playback)
Wow and flutter: 0.2 % (DIN 45 511)
(For Germany) 0.15 % (WRMS)
(For U.K.)

● Compact disc player section

Type: 3-disc multi-play compact disc player
Signal readout: Non-contact, 3-beam semi-conductor laser pickup
D/A converter: 1-bit D/A converter
Frequency response: 20 - 20,000 Hz
Dynamic range: 90 dB (1 kHz)

● Speaker section

Type: 100 mm (4") full-range speaker
Maximum input power: 20 W
Impedance: 8 ohms
Dimensions: Width; 180 mm (7-1/8")
 Height; 300 mm (11-13/16")
 Depth; 204 mm (8-1/16")
Weight: 2.1 kg (4.6 lbs.)/each

Specifications for this model are subject to change without prior notice.

NAMES OF PARTS

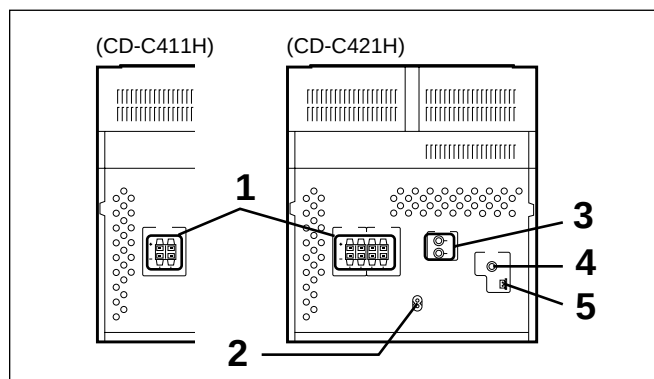
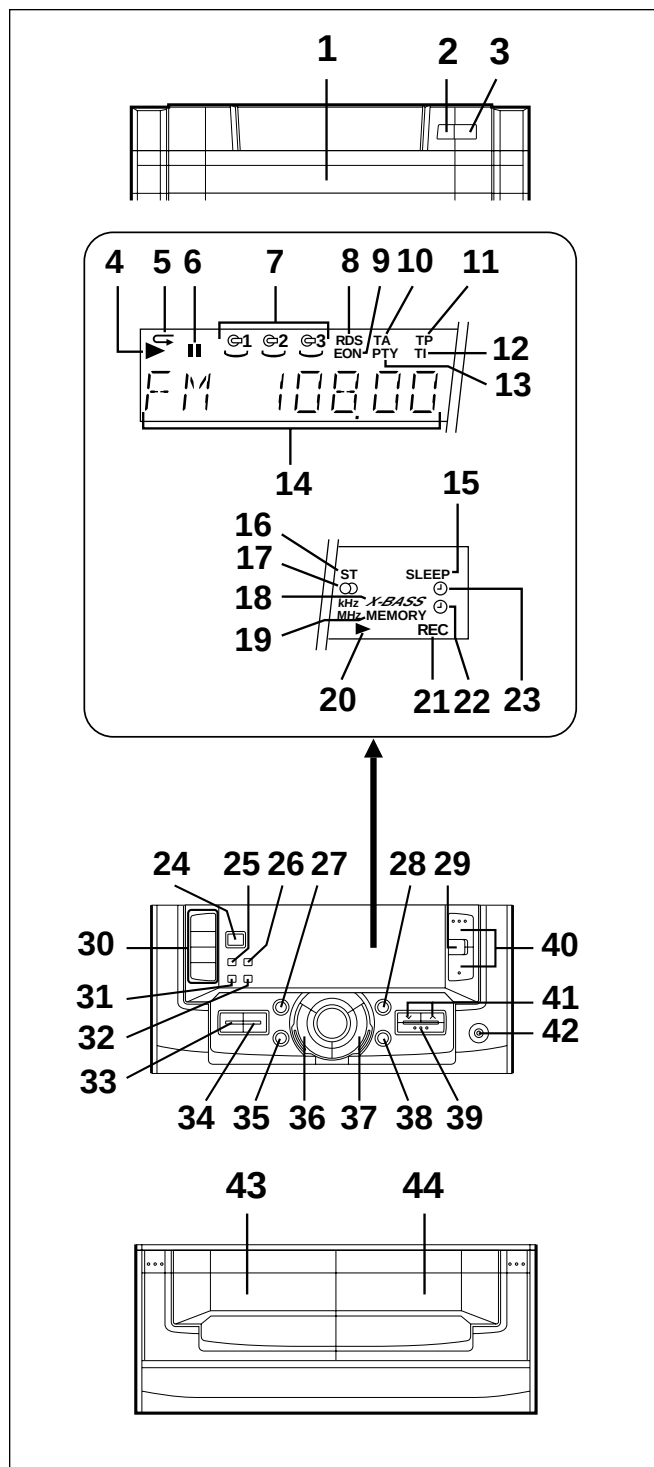
CD-C421H/C411H

Front Panel

1. Disc Tray
2. Disc Skip Button
3. Open/Close Button: ▲
4. CD Play Indicator: ►
5. CD Repeat Indicator: ⇌
6. CD Pause Indicator: ||
7. Disc Number Indicators
8. RDS Indicator
9. EON Indicator
10. Traffic Announcement Indicator: TA
11. Traffic Programme Indicator: TP
12. Traffic Information Indicator: TI
13. Programme Type Indicator: PTY
14. Function/CD Track/CD Counter/Frequency/Preset Channel/Volume/Timer/Sleep Time Indicator
15. Sleep Indicator
16. FM Stereo Mode Indicator: ST
17. FM Stereo Indicator: Ⓢ
18. Extra Bass Indicator: X-BASS
19. Memory Indicator
20. Tape Play indicator: ⇌
21. Record indicator
22. Timer Record Indicator
23. Timer Play Indicator
24. On/Stand-by Button
25. Programme Type/Traffic Information Search Button
26. EON Button
27. Memory/Set Button
28. Record Pause Button: ●
29. Extra Bass/Equalizer Mode Button
30. Function Selector Buttons
31. ASPM Button
32. Display Mode Selector Button
33. Clock Button
34. Timer/Sleep Button
35. (CD) Track Down/Review Button: ◀◀/◀
- (TUNER) Preset Down button: ∨
36. Stop Button: ■
37. Play/Repeat Button: ▶/⇌
38. (CD) Track Up/Cue Button: ▶▶/▶
- (TUNER) Preset Up button: ^
39. Random/Demo Button
40. Volume Up/Down Buttons: △/▽
41. Tuning and Time Up/Down Buttons: ∨/^
42. Headphone Socket
43. (TAPE1) Cassette Compartment
44. (TAPE2) Cassette Compartment

Rear Panel

1. Speaker Terminals
2. AC Power Input Socket
3. Video/Auxiliary (Audio Signal) Input Sockets
4. FM'75 Ohms Aerial Socket
5. AM Loop Aerial Socket



■ Speaker Section

● Front Speaker

CP-C421H

- 6. Tweeter
- 7. Woofer
- 8. Bass Reflex Duct
- 9. Speaker Wire

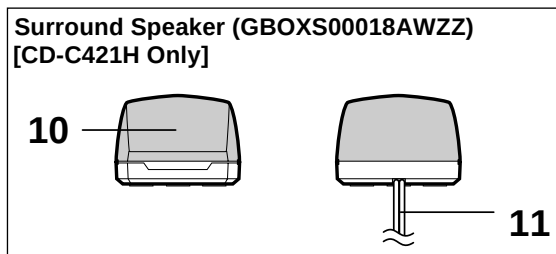
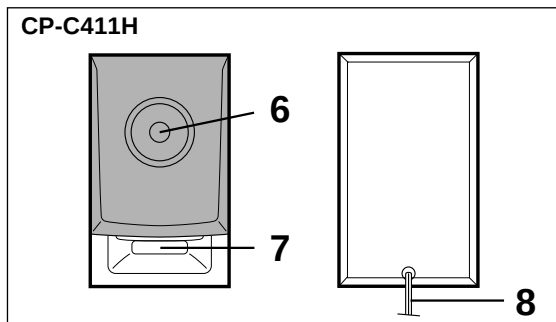
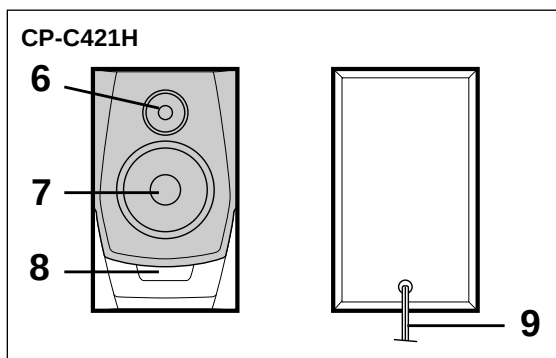
CP-C411H

- 6. Full-Range Speaker
- 7. Bass Reflex Duct
- 8. Speaker Wire

● Surround Speaker [CD-C421H Only]

GBOXS00018AWZZ

- 10. Full-Range Speaker
- 11. Speaker Wire



CD-C421H/C411H

■ Remote Control

- 1. Remote Control Transmitter LED

● CD control section

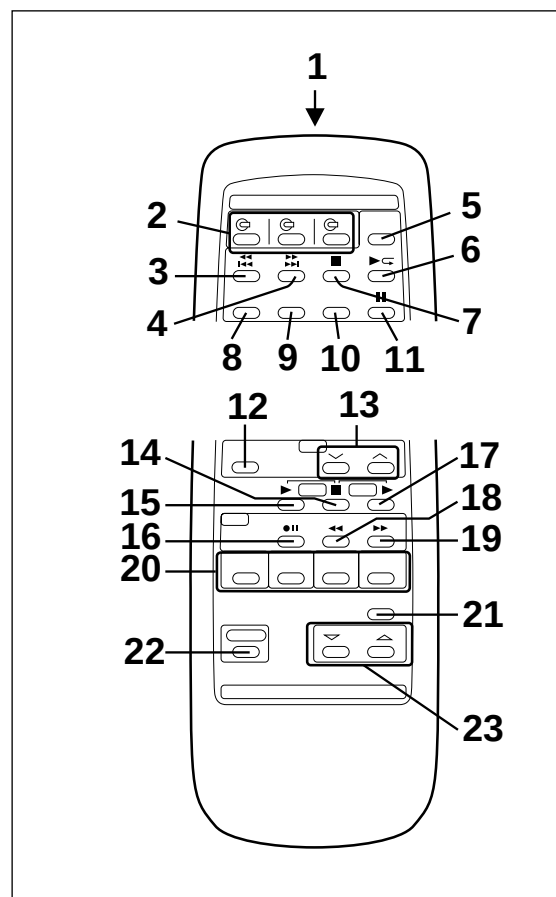
- 2. Disc Number Select Buttons
- 3. Track Down/Review Button: ◀◀/◀◀◀
- 4. Track Up/Cue Button: ▶▶/▶▶▶
- 5. Disc Skip Button
- 6. Play/Repeat Button: ▶/◀◀
- 7. Stop Button: ■
- 8. Memory Button
- 9. Clear Button
- 10. Random Button
- 11. Pause Button: ||

● Tuner control section

- 12. Programme Type/Traffic Information Search Button
- 13. Preset Up/Down Buttons: ∇/△

● Tape control section

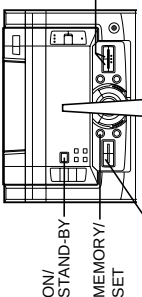
- 14. (TAPE 1/2) Stop Button: ■
- 15. (TAPE 1) Play Button: ▶
- 16. (TAPE 2) Record Pause Button: ●||
- 17. (TAPE 2) Play Button: ▶
- 18. (TAPE 2) Rewind Button: ◀◀
- 19. (TAPE 2) Fast Forward Button: ▶▶
- 20. Function Selector Buttons
- 21. Extra Bass/Equalizer Mode Button
- 22. Onn/Stand-by Button
- 23. Volume Up/Down Buttons: ∇/△



OPERATION MANUAL

SETTING THE CLOCK

In this example, the clock is set for the 24-hour (0:00) system.



ON/STAND-BY
MEMORY/SET
CLOCK

TUNING/TIME (V or ^)

2

3

4

5

6

7

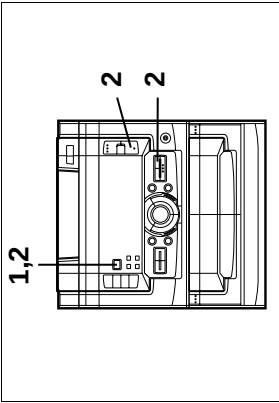
8

9

0:00 ↔ AM 12:00 ↔ AM 0:00

- (Main unit operation)**
- 1 Press the ON/STAND-BY button to enter the stand-by mode.
 - 2 Press the CLOCK button.
 - 3 Within 5 seconds, press the MEMORY/SET button.
 - 4 Press the TUNING/TIME (V or ^) button to select the time display mode.
 - The 24-hour display will appear.
(0:00 - 23:59)
 - The 12-hour display will appear.
(AM 12:00 - PM 11:59)
 - The 12-hour display will appear.
(AM 0:00 - PM 11:59)
- Note that this can only be set when the unit is first installed or it has been reset (see page 23).
- 5 Press the MEMORY/SET button.
 - 6 Press the TUNING/TIME (V or ^) button to adjust the hour.
 - Press the TUNING/TIME (V or ^) button once to advance the time by 1 hour. Hold it down to advance continuously.
 - When the 12-hour display is selected, "AM" will change automatically to "PM".
 - 7 Press the MEMORY/SET button.
 - 8 Press the TUNING/TIME (V or ^) button to adjust the minutes.
 - Press the TUNING/TIME (V or ^) button once to advance the time by 1 minute. Hold it down to change the time in 5 minute intervals.
 - The hour setting will not advance even if minutes advance from "59" to "00".
 - 9 Press the MEMORY/SET button.
 - The clock starts operating from "0" seconds. (Seconds are not displayed.)
- Note:**
- In the event of a power failure or when the AC power lead is disconnected, the clock display will go out. When the AC power supply is restored, the clock display will flash on and off to indicate the time when the power failure occurred or when the AC power lead was disconnected. If this happens, follow the procedure below to change the clock time.
- To change the clock time:**
- When the unit is in the stand-by mode:
- ① Press the MEMORY/SET button.
 - ② Perform steps 6 - 9 above.
- When the unit is on:
- ① Press the CLOCK button.
 - ② Within 5 seconds, press the MEMORY/SET button.
 - ③ Perform steps 6 - 9 above.
- To see the time display:**
- Press the CLOCK button.
- The time display will appear for about 5 seconds.
- To change the time display mode:**
- ① Perform steps 1 - 2 in the section "RESETTING THE MICRO-COMPUTER", on page 23.
 - ② Perform steps 1 - 9 above.

RESETTING THE MICROCOMPUTER



- Reset the microcomputer under the following conditions:
- To erase all of the stored memory contents (clock and timer settings, and tuner and CD presets).
 - If the display is not correct.
 - If the operation is not correct.
- 1 Press the ON/STAND-BY button to enter the stand-by mode.
 - 2 While pressing down the VOLUME V button and the only TUNING/TIME ^ button, hold down the ON/STAND-BY button for at least 1 second.
- Caution:**
- The operation explained above will erase all data stored in memory including clock and timer settings, and tuner and CD presets.

DISASSEMBLY

Caution on Disassembly

Follow the below-mentioned notes when disassembling the unit and reassembling it, to keep it safe and ensure excellent performance:

1. Take cassette tape and compact disc out of the unit.
2. Be sure to remove the power supply plug from the wall outlet before starting to disassemble the unit.
3. Take off nylon bands or wire holders where they need to be removed when disassembling the unit. After servicing the unit, be sure to rearrange the leads where they were before disassembling.
4. Take sufficient care on static electricity of integrated circuits and other circuits when servicing.

CD-C421H/C411H

STEP	REMOVAL	PROCEDURE	FIGURE
1	Top Cabinet	1. Screw (A1) x4	7-1
2	Side Panel (Left/right)	1. Screw (B1) x2 2. Screw (B2) x4	7-1
3	CD Player Unit/ CD Tray Cover	1. Turn on the power supply, open the disc tray, take out the CD cover, and close. (Note 1) 2. Hook (C1) x3 3. Hook (C2) x2 4. Socket (C3) x4	7-2
4	Back Board	1. Screw (D1) x6	7-2
5	Tuner PWB	1. Screw (E1) x3 2. Socket (E2) x1	8-1
6	Switch PWB/ Display PWB/ Main PWB/	1. Screw (F1) x6 2. Screw (F2) x2 3. Socket (F3) x4	8-1.2
7	Front Panel	1. Screw (G1) x3 2. Hook (G2) x2	8-2
8	Tape Mechanism	1. Open the cassette holder. 2. Screw (H1) x6	8-2
9	Turntable	1. Screw (J1) x1 2. Cover (J2) x1	8-3
10	Disc Tray	1. Screw (K1) x2 2. Guide (K2) x2	8-3
11	CD Changer Mechanism	1. Screw (L1) x4	8-4
12	CD Mechanism	1. Screw (M1) x1	8-4

Note 1:

How to open the changer manually. (Fig.7-3)

1. Insert the tip of fine screwdriver into the hole of CD player base, and press down the worm wheel < A > .
 2. Then, turn fully the lock lever in the arrow direction through the hole on the loading chassis bottom in this state.
- After that, push forward the CD player base.

CD-C421H/C411H

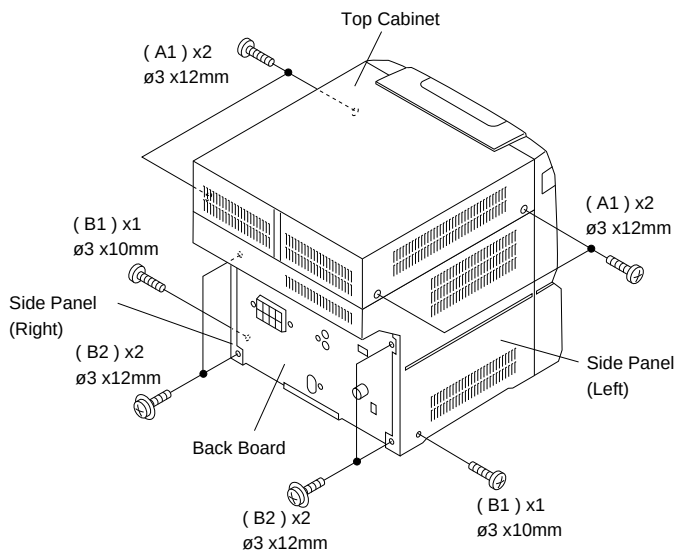


Figure 7-1

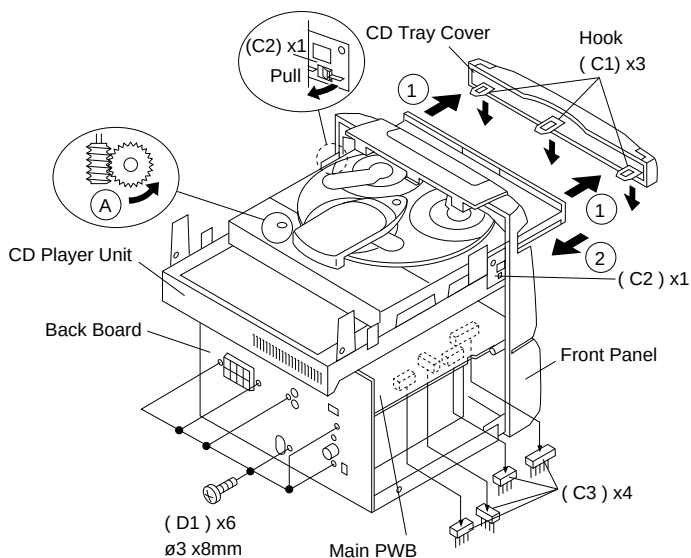


Figure 7-2

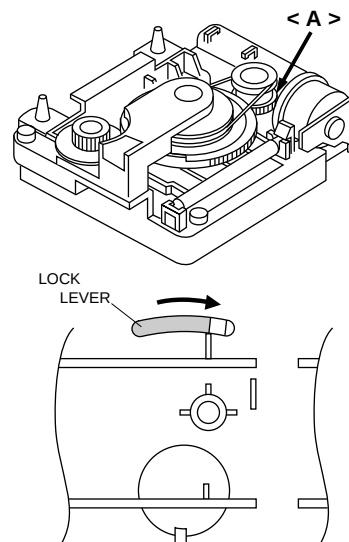


Figure 7-3

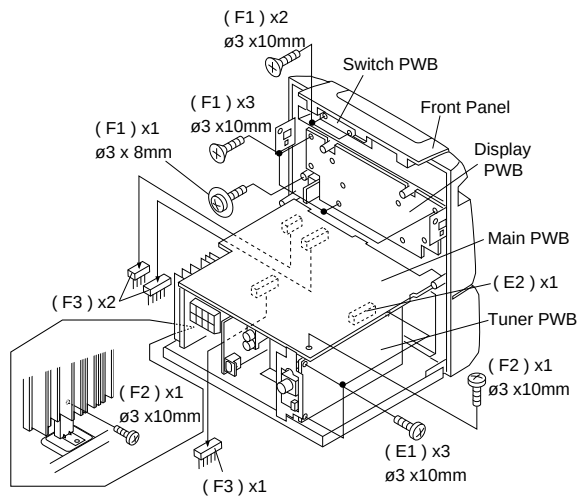


Figure 8-1

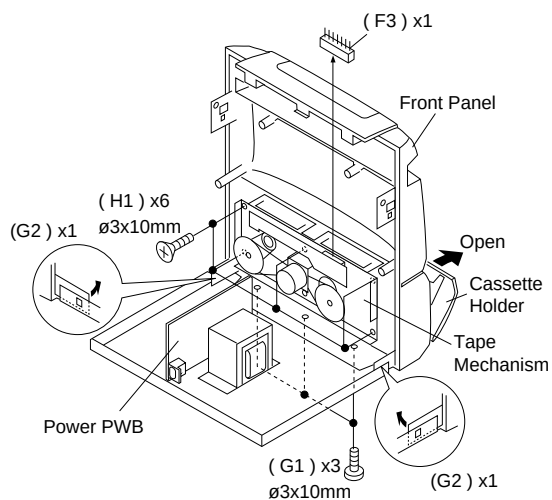


Figure 8-2

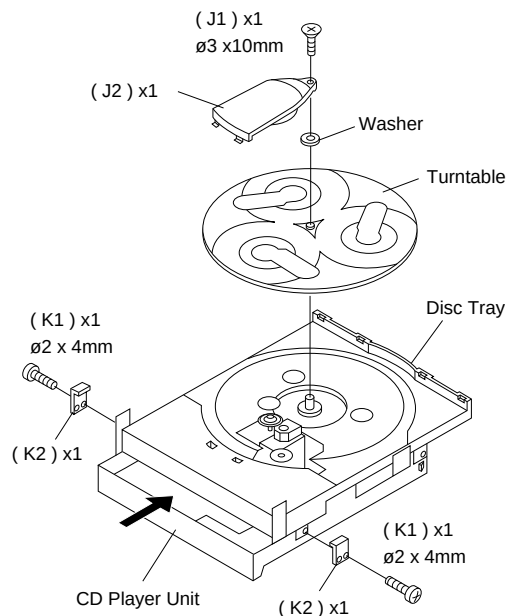
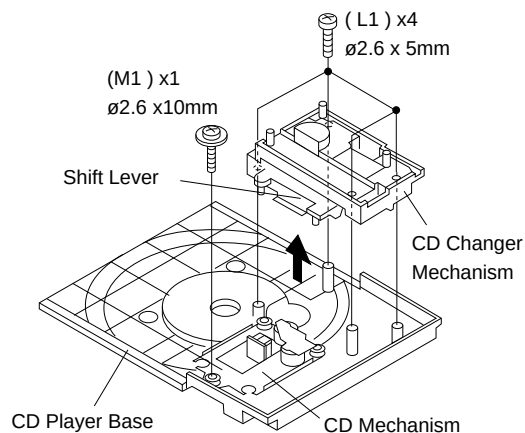


Figure 8-3

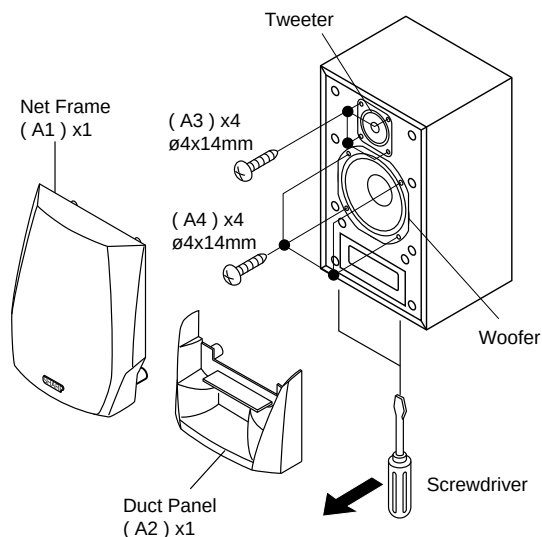


Be careful when installing the CD changer mechanism. Install the CD changer mechanism on the CD player base after the shift lever has been set in the highest position.

Figure 8-4

CP-C421H

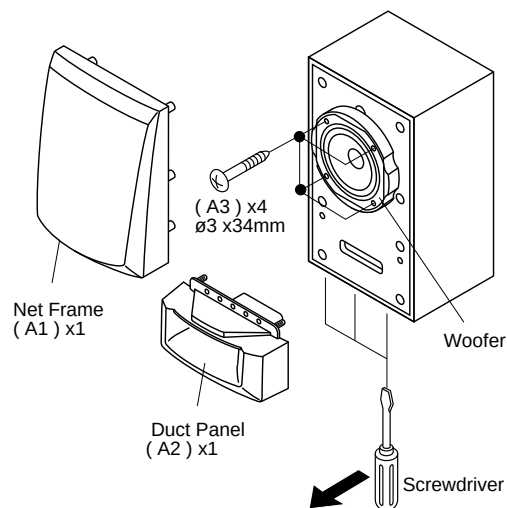
STEP	REMOVAL	PROCEDURE	FIGURE
1	Front Speaker	1. Net Frame (A1) x1 3. Duct Panel (A2) x1 3. Screw (A3) x4 4. Screw (A4) x4	9-1

**Figure 9-1****Notes:**

The Surround speakers (CD-C421H only) can be easily disassembled. Therefore the disassembling method is not described. For details refer to the disassembling drawing in the Parts Guide.

CP-C411H

STEP	REMOVAL	PROCEDURE	FIGURE
1	Front Speaker	1. Net Frame (A1) x1 3. Duct Panel (A2) x1 3. Screw (A3) x4	9-2

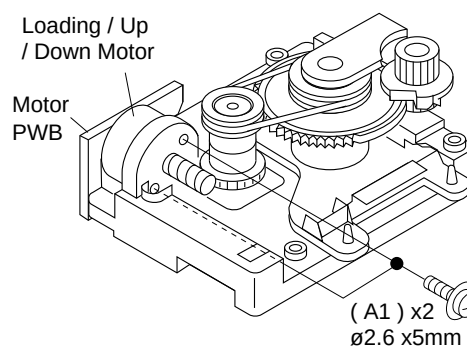
**Figure 9-2****REMOVING AND REINSTALLING THE MAIN PARTS****CD MECHANISM SECTION**

Perform steps 1, 2, 3, 13 and 14 of the disassembly method to remove the CD mechanism.

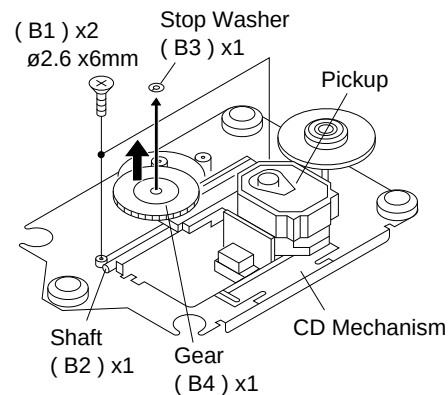
How to remove the loading motor

(See Fig. 9-3)

1. Remove the screws (A1) x 2 pcs., to remove the loading motor.

**Figure 9-3****How to remove the pickup (See Fig. 9-4)**

1. Remove the screws (B1) x 2 pcs., to remove the shaft (B2) x 1 pcs.
2. Remove the stop washer (B3) x 1 pc., to remove the gear (B4) x 1 pc.
3. Remove the pickup.

**Figure 9-4**

ADJUSTMENT

MECHANISM SECTION

• Driving Force Check

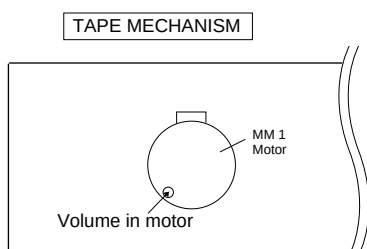
Torque Meter	Specified Value
Play: TW-2412	Tape 1: Over 80 g Tape 2: Over 80 g

• Torque Check

Torque Meter	Specified Value	
	Tape 1	Tape 2
Play: TW-2111	30 to 60 g.cm	30 to 60 g.cm
Fast forward: TW-2231	—	60 to 120 g.cm
Rewind: TW-2231	—	60 to 120 g.cm

• Tape Speed

	Test Tape	Adjusting Point	Specified Value	Instrument Connection
Normal speed	MTT-111	Volume in motor. (MM1)	3,000 ± 30 Hz	Speaker terminal (Load resistance: 8 ohms)



TUNER SECTION

fL: Low-range frequency

fH: High-range frequency

• AM IF/RF

Signal generator: 400 Hz, 30%, AM modulated

Test Stage	Frequency	Frequency Display	Setting/ Adjusting Parts	Instrument Connection
IF	450 kHz	1,620 kHz	T351	*1
AM Band Coverage	—	522 kHz	(fL): T306 1.1 ± 0.1 V	*2
AM Tracking	990 kHz	990 kHz	(fL): T302	*1

*1. Input: Antenna, Output: TP302

*2. Input: Antenna, Output: TP301

• FM

Notes:

1: Description of the "FM IF Adjustment" is not carried on this Manual. It is because the IF coil in the FM front end section has been best adjusted in the factory so that its further adjustment is not needed at the field. When replacing the FM front end assembly, no adjustment is needed either.

2: The parts in the FM front end section are prepared in a complete unit, so you can't obtain each part individually

• FM Mute Level

Signal generator: 1 kHz, 40 kHz dev., FM modulated

Frequency	Frequency Display	Adjusting Parts	Instrument Connection
98.00 MHz (25 dBμV)	98.00 MHz	VR351*	Input: Antenna Output: Speaker Terminal

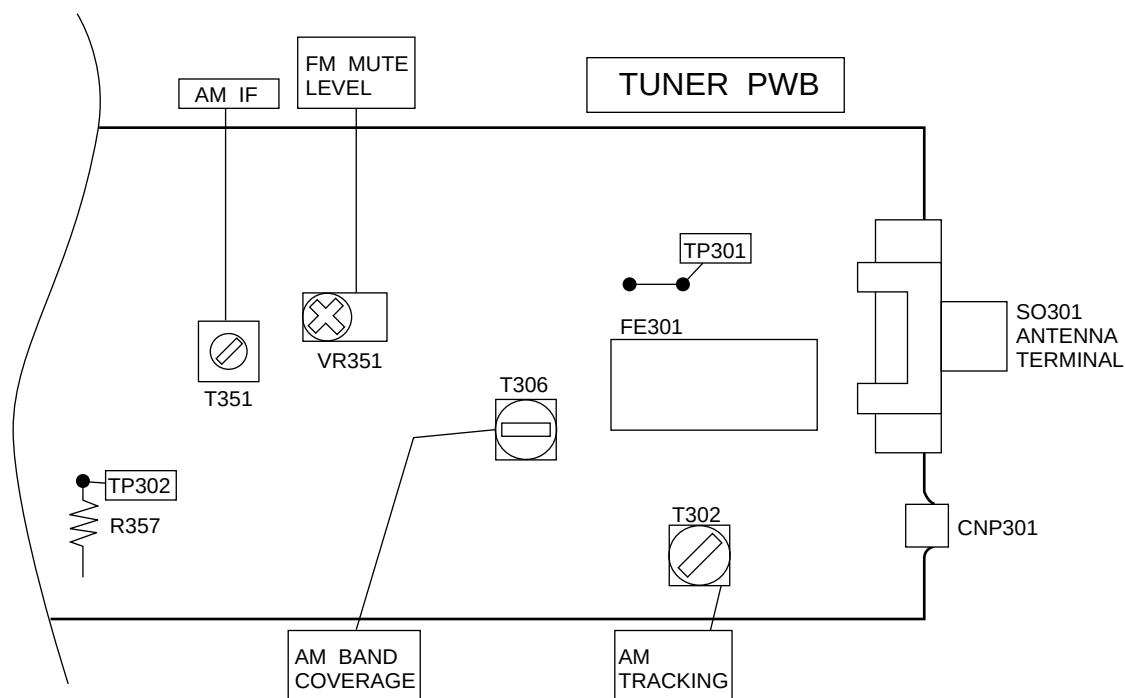


Figure 10 ADJUSTMENT POINTS

TEST MODE

• Setting the test mode

Any one of test mode can be set by pressing several keys as follows.

<REC. PAUSE> + <CD> + <POWER> TEST: CD operation test

• TEST mode

Function — CD test mode

Setting of TEST mode

Indication of CD TST mode (Fig. 11-1)

OPEN/CLOSE operation is manual operation.

The pickup can be moved by using the (▶▶) or (◀◀) key.

IL is not performed.

<MEMORY> LASER ON — <MEMORY> Tracking on the spot. SERVO OFF PLAY — <MEMORY> Tracking on the spot. SERVO ON PLAY — <STOP> STOP

<PLAY> key input — TOC. IL is performed, and the ordinary PLAY is performed. — Press <STOP> key. — Stop
If the following key is pressed during PLAY, it is possible to specify directly any Track No.
<Disc Number 1> key: Track 4
<Disc Number 2> key: Track 9
<Disc Number 3> key: Track 15

Note:

Only in STOP state it is possible to slide the pickup with the (▶▶) or (◀◀) key.

VOL. --- Last memory

BAL. --- CENTER

R.GEQ. --- FLAT

X-BAS --- OFF

Canceling method - POWER OFF

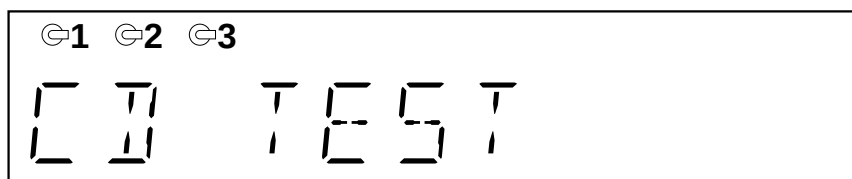


Figure 11-1

CD SECTION

Since this CD system incorporates the following automatic adjustment function, when the pickup is replaced, it is not necessary to readjust it.

Since this CD unit does not need adjustment, the combination of PWB and laser pickup unit is not restricted.

• Automatic adjustment item

1. Focus offset (Fig. 11-2)
2. Tracking offset (Fig. 11-3)
3. E/F balance (tracking error balance) (Fig. 11-4)
4. RF level AGC function (HF level: constant)
5. RF level automatic follow-up of the tracking gain

This automatic adjustment is performed each time a disc is changed. Therefore, each disc is played back using the optimal settings.

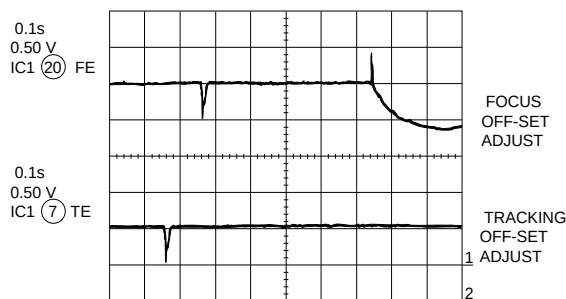


Figure 11-2

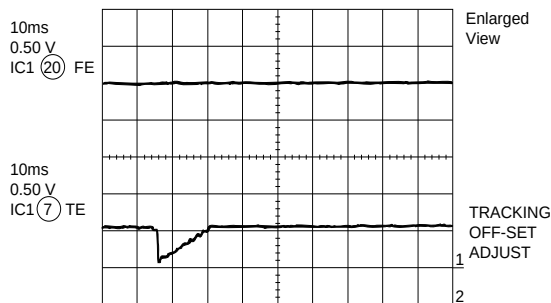


Figure 11-3

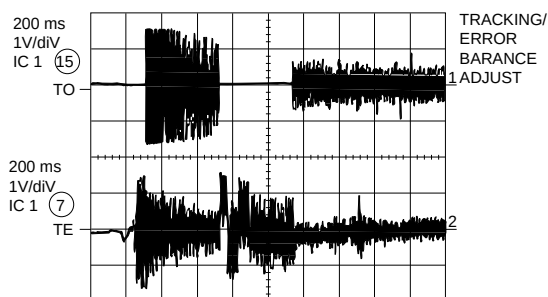


Figure 11-4

RDS (Radio Data System) OPERATION

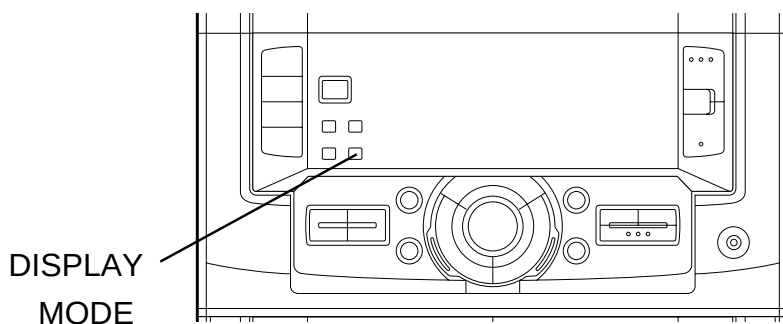


Figure 12-1

■ Receiving FM Stations with RDS (Radio Data System)

RDS is a broadcasting service which a growing number of FM stations are now providing. It allows these FM stations to send additional signals along with their regular programme signals. For example, the stations send their station names, and information about what type of programme they broadcast, such as sports or music, etc.

When tuned to an FM station which provide the RDS service, the RDS will appear, the station frequency (and then the station name if sent) is displayed.

The TP (Traffic Programme) will appear on the display when the received broadcast carries traffic announcements, and the TA (Traffic Announcement) will appear whilst a traffic announcement is being received. EON will appear whilst the EON (Enhanced Other Networks information) data is being broadcast.

Note:

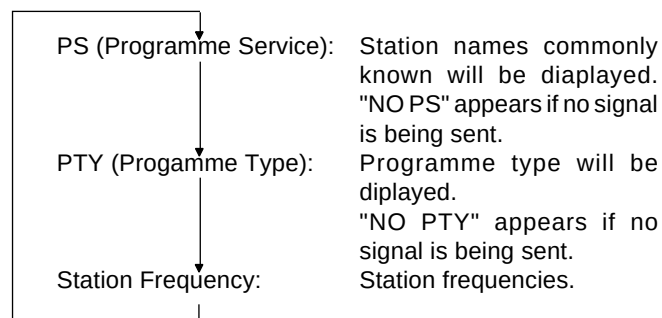
When the TP and TA appear at the same time, an announcement is being made.

When only the TA appears, an announcement is not being made. (See page 15.)

■ Information Provided by RDS

With the CD-C421H/C411H, you can display two types of RDS service. To show them in the display, press the DISPLAY MODE button.

Each time you press the DISPLAY MODE button, the display will change to show the following information.



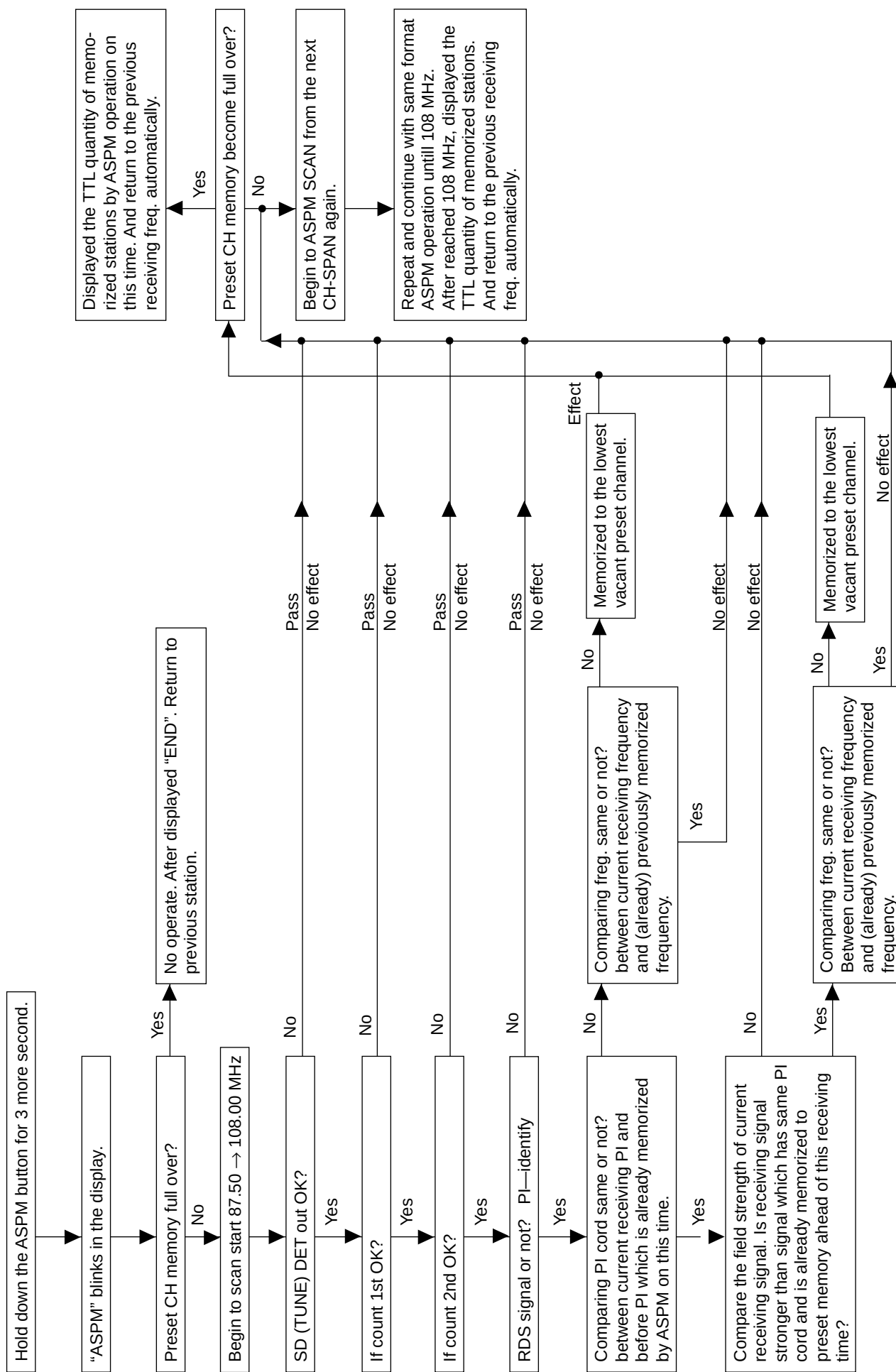
Descriptions of the PTY (Programme Type) codes, TP (Traffic Programme) and TA (Traffic Announcement)

With the CD-C421H/C411H, you can search for and receive the following PTY, TP and TA signals.

NEWS:	News
AFFAIRS:	Topical programme expanding on the current news or affairs
INFO:	Programmes on medical service, weather forecast, etc.
EDUCATE:	Educational programmes
DRAMA:	Radio plays
CULTURE:	Programmes on national or regional culture.
SCIENCE:	Programmes on national sciences and technology.
VARIED:	Other programmes like comedies or ceremonies
POP M:	Pop music
ROCK M:	Rock music
M.O.R. M:	Middle-of-the-road music (usually called "easy listening")
LIGHT M:	Light music
CLASSICS:	Classics
OTHER M:	Other music
ALARM:	Emergency broadcasts
NONE:	no Programme type (receive only)
TP:	Broadcasts which carry traffic announcements
TA:	Traffic announcements are being broadcast at present.

Note:

● When the unit is in the EON stand-by mode and a programme is selected, the unit will display "TI" instead of "TP" or "TA".

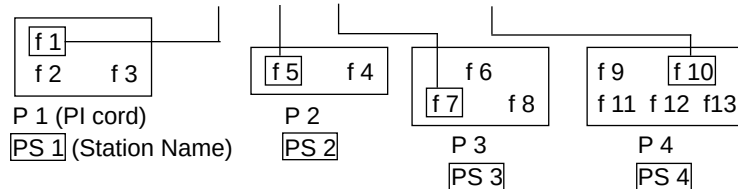
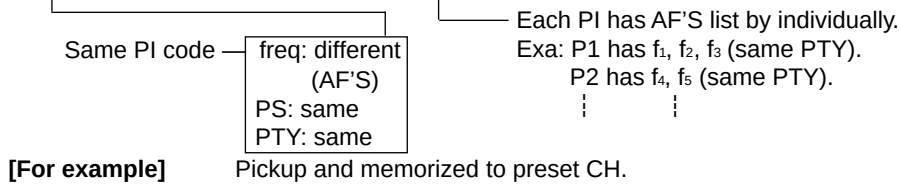


CD-C421H / C411H

- ASPM SCAN: 87.50MHz → 108.00 MHz.
- Only RDS signal is memorized by ASPM because RDS signal has PI code and is suitable and convenient for ASPM operation.

ASPM

Comparing field strength, only one strongest RDS station is memorized of all stations (repeater relay stations) that have same PI code.



Select signals (f1, f5, f7, f10) are memorized in the preset memory by ASPM.

- If tentative - ASPM operation is repeated intentionally, never memorized (over write) at the same frequency. 1st time ASPM → strongest stations of each pi are memorized.

ASPM is not only very usefull for PTY search, but also EON operation.

2nd time ASPM → 2nd strong stations of each pi are memorized and so on.

PTY search function is equal to FM band search function as a result.

1. Introduction of RDS for CD-C421H/C411H

CD-C421H/C411H RDS function is equal to adding EON feature to the current CD-C75H RDS.

EON feature is EON—PTY and EON—TI.

Although PTY and TI indicators are separated, PTY contains TI in the PTY items (software) like current PTY search items.



EON—PTY and EON—TI are basically stand-by → receive the desired program of ON station.

2. The difference point from current CD-C75H RDS. (CD-C75H — CD-C421H/C411H)

1. PTY item: added TA.TTL 18 kind.
2. Each "TP", "TA" ind. light up or go out individually.
"TA" ind. doesn't light up on current model, CD-C75H due to none EON—TI.
3. Added 3 indicators(in FL) due to adding EON feature.
EON: Lights up only during receiving EON data (14A).
TI: During EON-TI stand-by → Light up
During receiving ON station. → blink.
PTY: During EON-PTY stanb-by → Light up
During receiving ON station. → blink.

4. No adjust type (None adjusting circuit.)

5. Added EON button.

6. Need to change RDS logo due to add EON feature.

7. Added EON—TI, EON—PTY function.

3. Summary of CD-C421H/C411H RDS—EON operation

EON—PTY: Select and set the desired "PTY" → stand-by → switch to ON(other network) Station at the start of desired PTY automatically → stay and listen to PTY of ON station → switch back to TN(This net) station automatically at the end of PTY(ON) i.e. after changing to another PTY(except AFFAIRS) or cancelling to receive PTY of ON station midway.

EON—TI: Select and set the "TI" → stand-by → switch to ON station at the start of traffic announcement automatically → stay and listen to TA of ON station → switch back to TN station automatically at the end of TA(ON). ie after TA(ON) is over or cancelled to receive TA of ON station midway.

When switching TN → ON station.

In case of exist 2 more stations having the desired(specified) "PTY" or "TI", the receiver will select and switch to ON station comparing field strength at the same time. But when the frequency of ON station exists in the preset-memory, then reciver switches straight to that ON station(CH), without comparing field strength so can make a quick switching from TN—ON station. Preset memory takes priority of switching TN—ON station.

therefore ASPM is usefull not only for PTY search but also for rapid EON switching. Anyway CD-C421/C411H EON is basi cally stand-by and receiving method, along with the Guidelines for EON implementation.

EON summary notice for reference

1. EON-TI/PTY EON stand-by can be set, only when EON ind. lights up.
While EON ind. goes out (NO EON STATION), EON stand-by can't be set.
If the EON button is pressed, then "NO EON" is indication the display.
2. EON-TI/PTY Even if switch back ON→TN station continue to keep EON stand-by.
3. EON-TI Don't switch TN→ON during TN broadcast TA. (same item)
4. EON-TI/PTY EON can be cancelled during receiving ON station by pressing EON button if necessary and switch back ON→TN.
5. EON-TI/PTY EON stand-by is perfectly cancelled (cleared) by pressing EON button 2 times during stand-by or powerOFF or Tun Up/ Down or change band or recall pre-set CH.
6. EON-TI/PTY After setting EON stand-by, stand-by items can be confirmed by pressing EON button one time.
7. EON-TI/PTY EON button function:
 - EON setting
 - Confirm stand-by items
 - Cancel (ON→TN)
 - EON clear cancel (2 times)
8. EON-TI/PTY After setting EON-TI and EON-PTY stand-by, if when EON data is not transmitted, EON ind goes out and EON stand-by is automatically cancelled display "NO EON".
9. EON-TI EON-TI stand-by can't be set. When TP=0,TA=0(TN) even if EON ind. lights up and the EON button is pressed then "NO TI" is indication the display.
10. EON-PTY Don't switch TN→ON during TN broadcast same specified PTY. (same item of PTY)
11. EON-TI/PTY Switch TN→ON→ TN station one cycle.
Never switch TN→ON1→ON2→ Other net to other net station.
12. EON-TI/PTY After switch TN→ON station. When ON station is NO RDS, NO signal, TA=OFF or different PTY items. The receiver switch back ON→TN displaying "NO READY".
13. During receive ON station. when ON station become to be NO RDS, NO signal, TA=ON to OFF or different PTY item, The receiver switch back ON→TN.
14. EON-TI/PTY Switch TN→ON in case of 2 more stations exist, comparing field strength and switch to the strongest station, if these signals are same strength, switch to the first previous station.
If same frequency as AF'S exists in the preset memory, then switch TN→ON (preset memory station) straight.
In case of exist 2 more preset memories of AF'S, then switch to the preset CH which taken in EON DATA first, also in this case no concern to field strength.
15. Even if switch TN→ON preset memory straight, that ON station is very weak signal, then search another AF'S (ON) station comparing field strength and switch to the strongest station as a result. Of all stations of AF'S are very weak or no good condition, then, switch back ON→TN automatically display "NO READY".
16. EON-TI/PTY No linkage volume, power ON/OFF, and switch function.

Traffic Programme code (TP)	Traffic Announcement code (TA)	Applications
OFF	OFF	This programme does not carry traffic announcements nor does it refer, via EON, to a programme that does.
OFF	ON	This programme carries EON information about another programme which gives traffic information.
ON	OFF	This programme carries traffic announcements but none are being broadcast at present and may also carry EON information about other traffic announcements.
ON	ON	A traffic announcement is being broadcast on this programme at present.

NOTES ON SCHEMATIC DIAGRAM

- Resistor:

To differentiate the units of resistors, such symbol as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000 kohm and the resistor without any symbol is ohm-type resistor. Besides, the one with "Fusible" is a fuse type.

- Capacitor:

To indicate the unit of capacitor, a symbol P is used: this symbol P means micro-micro-farad and the unit of the capacitor without such a symbol is microfarad. As to electrolytic capacitor, the expression "capacitance/withstand voltage" is used.

(CH), (TH), (RH), (UJ): Temperature compensation

(ML): Mylar type

(P.P.): Polypropylene type

- Schematic diagram and Wiring Side of P.W.Board for this model are subject to change for improvement without prior notice.

- The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.

1. In the tuner section,

() indicates AM

2. In the main section, a tape is being played back.

3. In the deck section, a tape is being played back.

() indicates the record state.

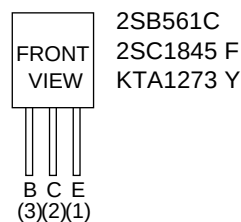
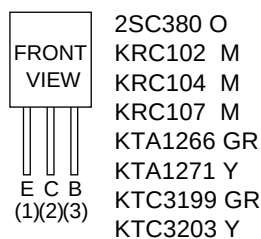
4. In the power section, a tape is being played back.

5. In the CD section, the CD is stopped.

- Parts marked with "△" (□ = = = □) are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

REF. NO	DESCRIPTION	POSITION
SW1	OPEN/CLOSE	ON—OFF
SW2	MECHA UP	ON—OFF
SW3	DISC NUMBER	ON—OFF
SW4	PICKUP IN	ON—OFF
SW701	ON/STAND-BY	ON—OFF
SW702	CLOCK	ON—OFF
SW703	TIMER/SLEEP	ON—OFF
SW704	CD	ON—OFF
SW705	TUNER/BAND	ON—OFF
SW706	TAPE	ON—OFF
SW707	VIDEO/AUX	ON—OFF
SW708	EON	ON—OFF
SW709	PTY, /TI SEARCH	ON—OFF
SW710	ASPM	ON—OFF
SW711	DISPLAY MODE	ON—OFF
SW712	REC PAUSE	ON—OFF

REF. NO	DESCRIPTION	POSITION
SW713	TUNING UP/TIME	ON—OFF
SW714	RANDOM DEMO	ON—OFF
SW715	VOLUME UP	ON—OFF
SW716	STOP	ON—OFF
SW717	FWD	ON—OFF
SW718	FF/PRESET UP	ON—OFF
SW719	MEMORY SET	ON—OFF
SW720	TUNING DOWN/TIME	ON—OFF
SW721	VOLUME DOWN	ON—OFF
SW722	X-BASS EQUALIZER	ON—OFF
SW724	REV/PRESET DOWN	ON—OFF
SW725	OPEN/CLOSE	ON—OFF
SW726	DISC SKIP	ON—OFF
SWM 3	FOOL PROOF	ON—OFF
SWM 4	F.A.S	ON—OFF
SWM 5	CAM	ON—OFF



FRONT VIEW



KV1236Z23F

Figure 16 TYPES OF TRANSISTOR AND LED

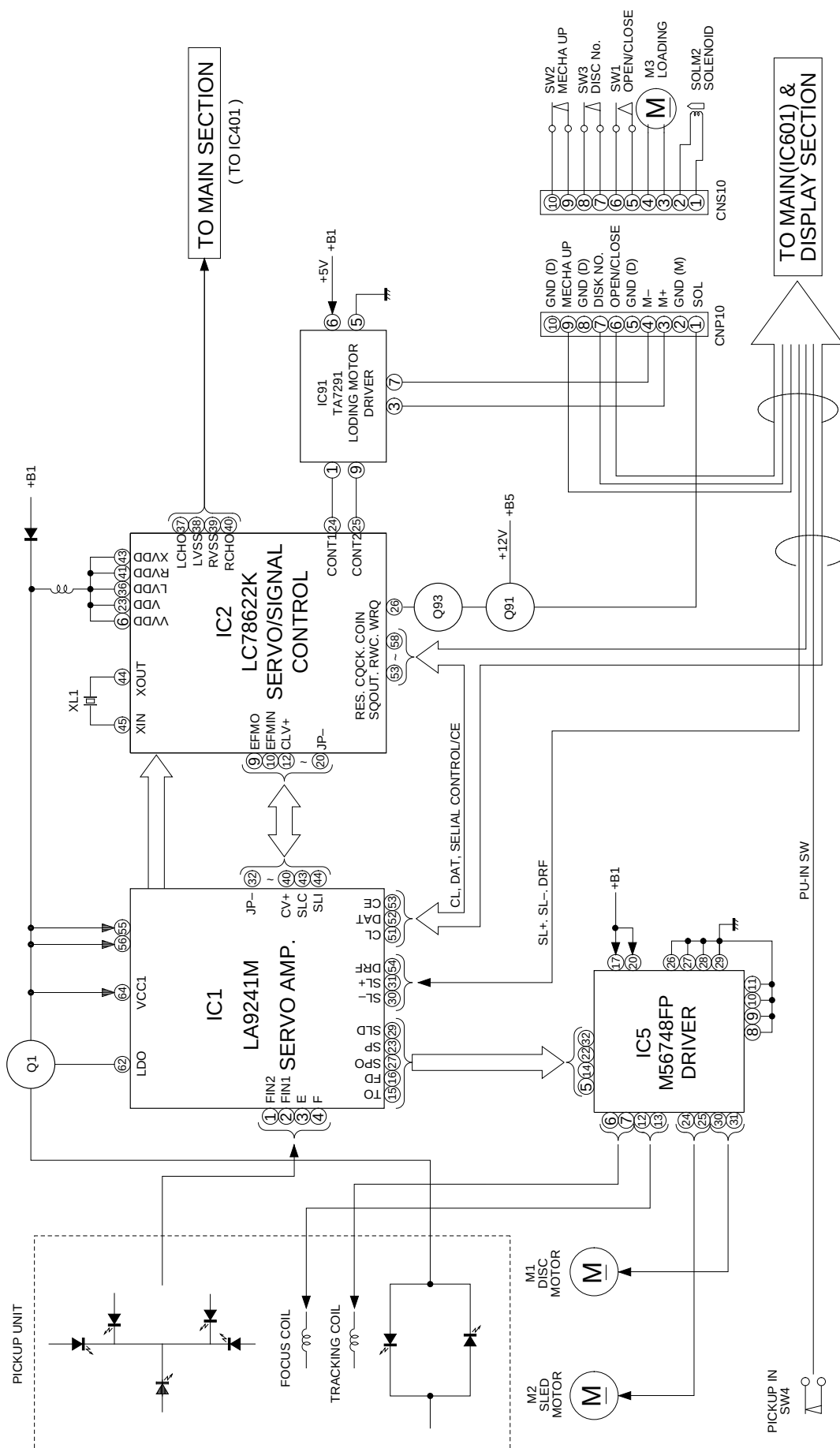


Figure 17 BLOCK DIAGRAM (1/3)

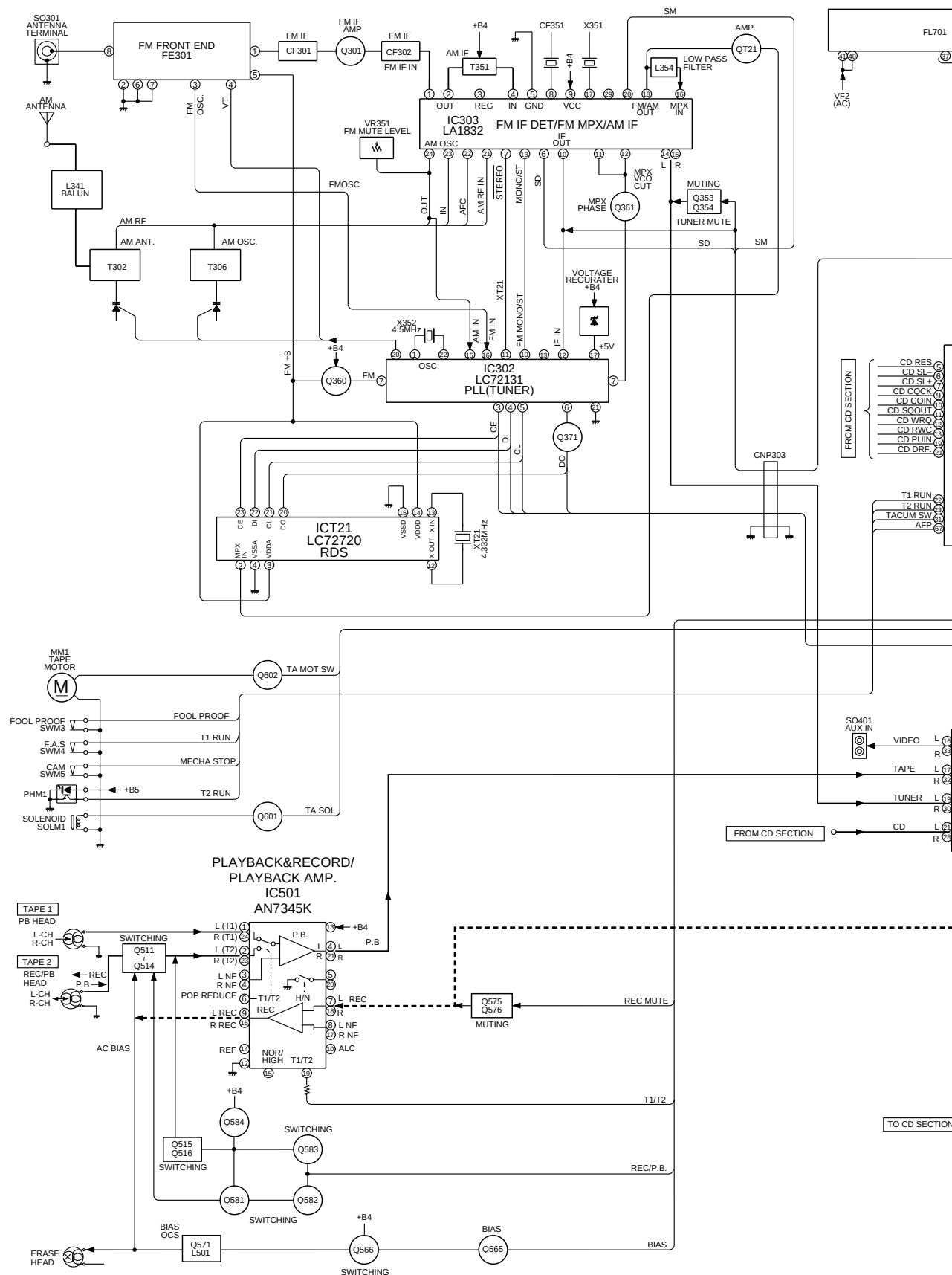


Figure 18 BLOCK DIAGRAM (2/3)

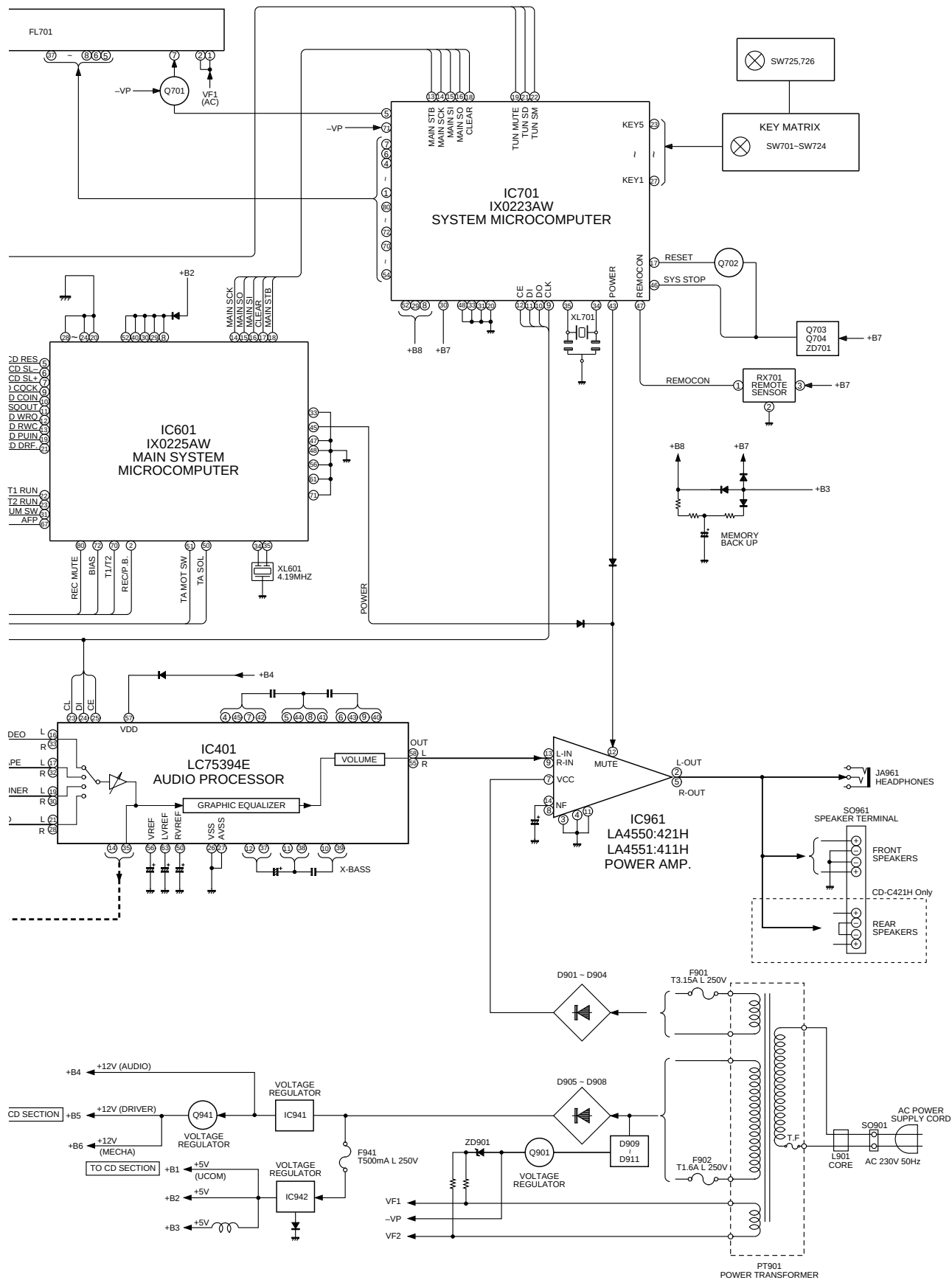
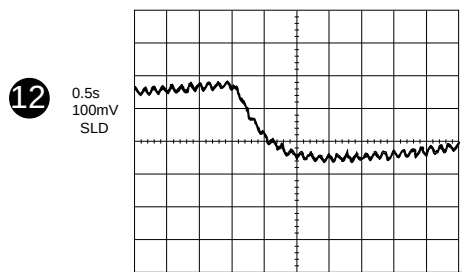
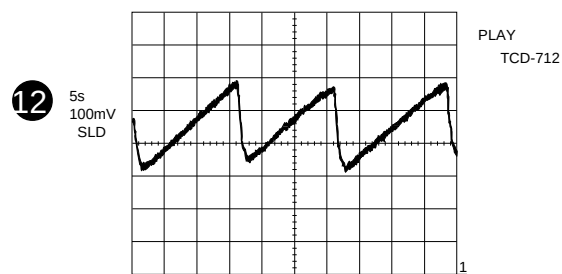
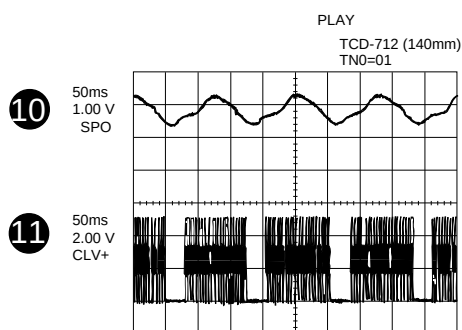
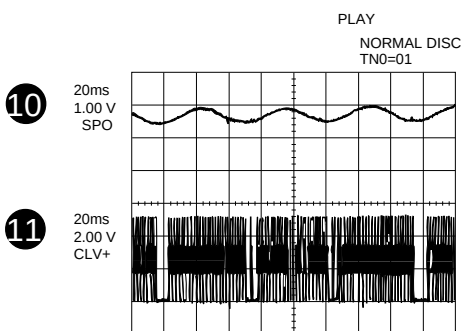
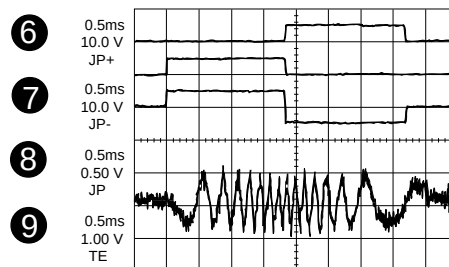
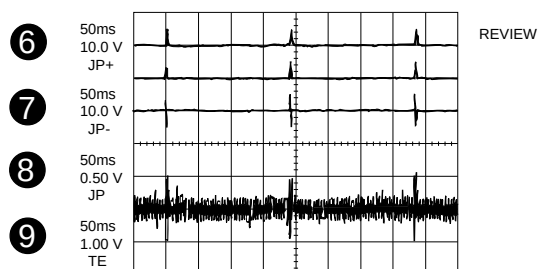
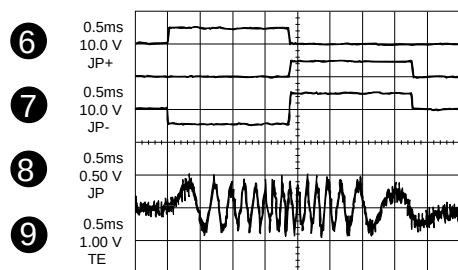
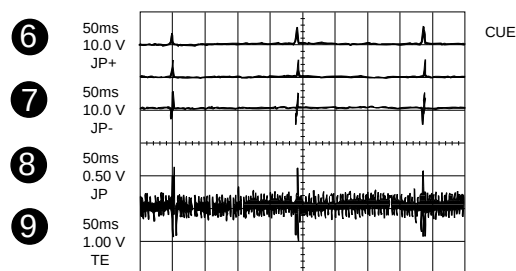
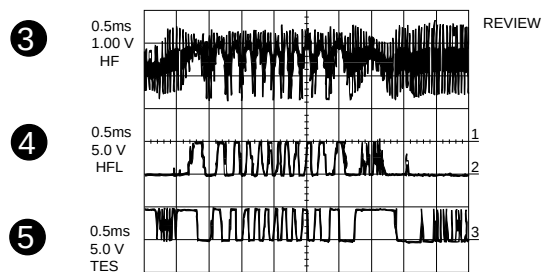
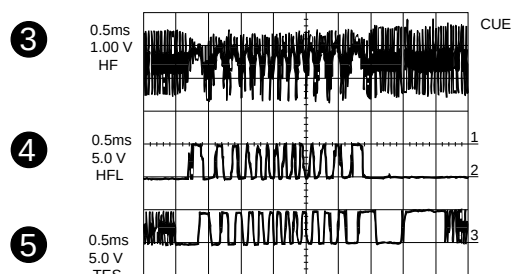
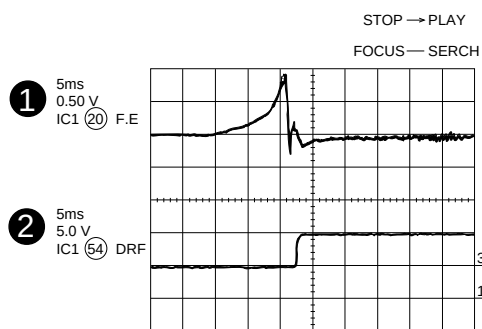


Figure 19 BLOCK DIAGRAM (3/3)

WAVEFORMS OF CD CIRCUIT



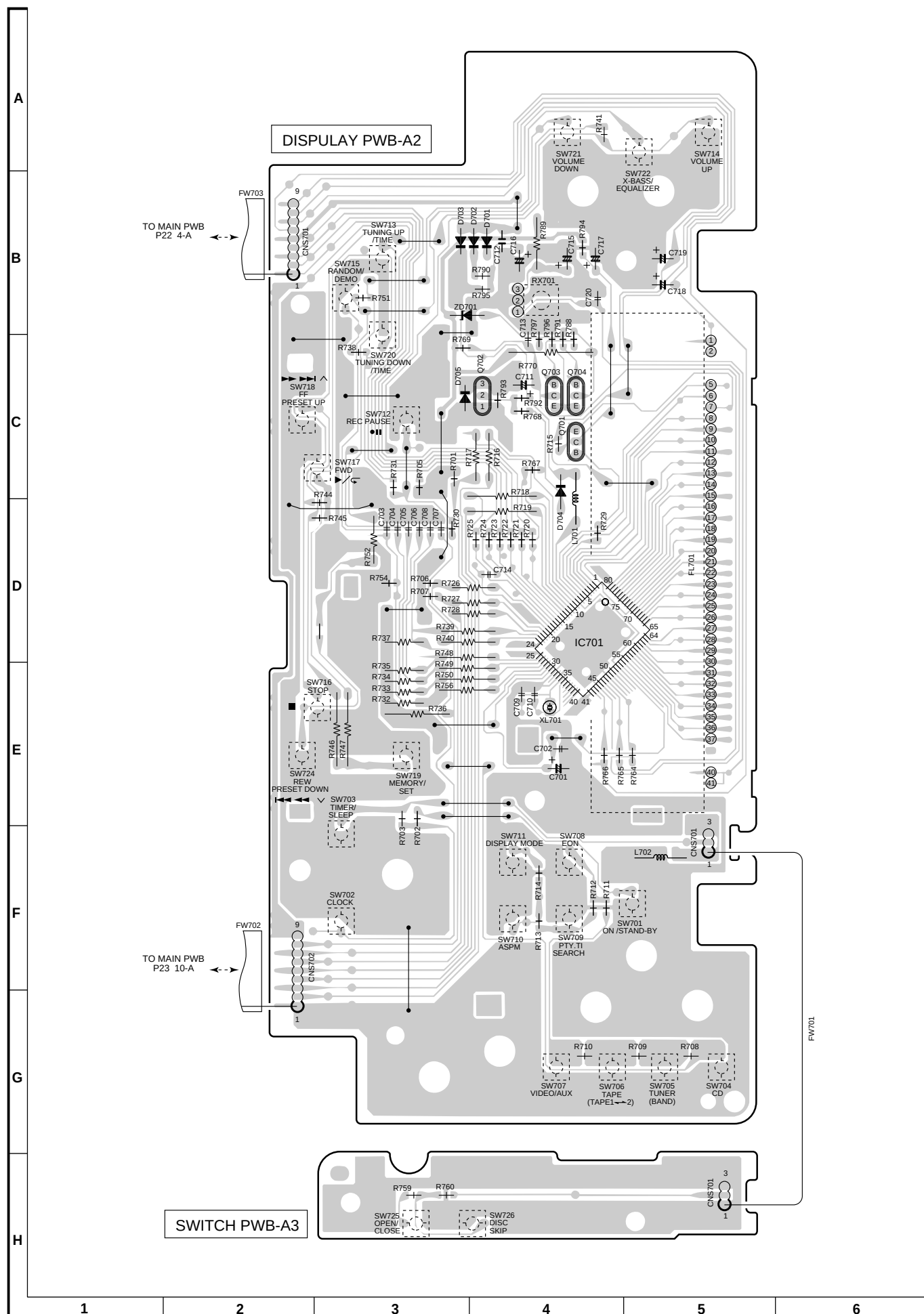
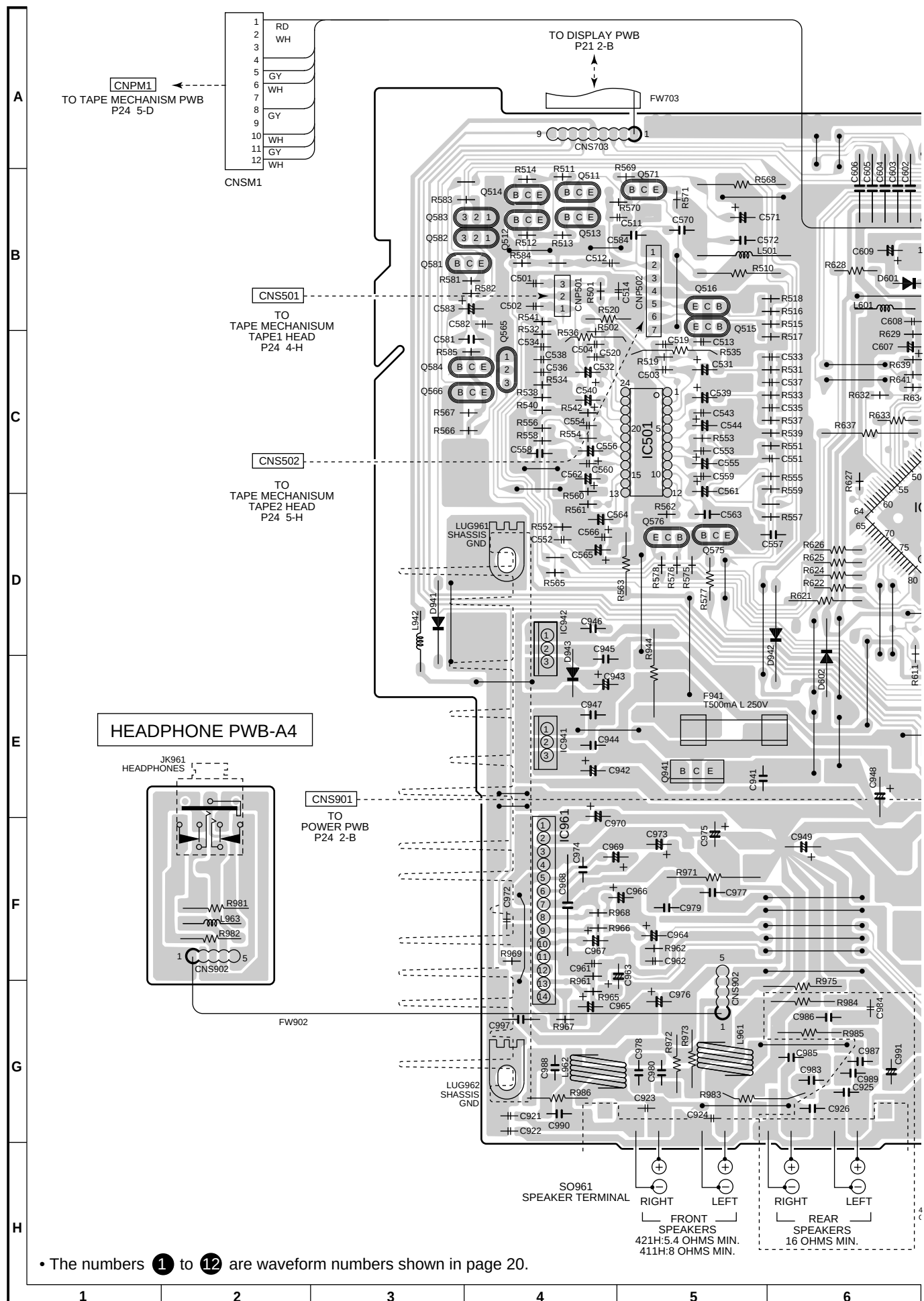


Figure 21 WIRING SIDE OF P.W.BOARD (1/6)



• The numbers ① to ⑫ are waveform numbers shown in page 20.

Figure 22 WIRING SIDE OF P.W.BOARD (2/6)

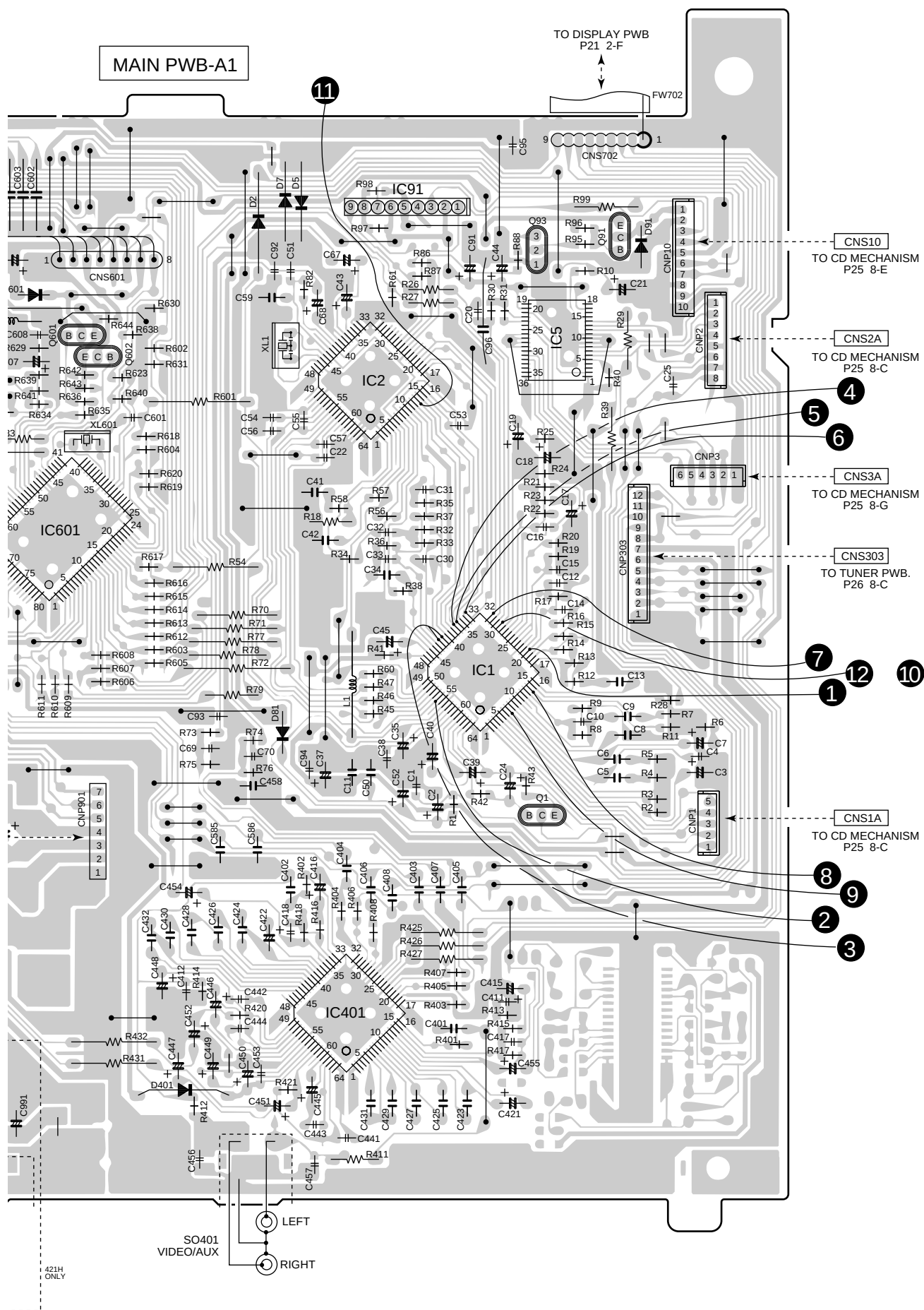


Figure 23 WIRING SIDE OF P.W.BOARD (3/6)

When Servicing, pay attention as the area enclosed by this line
(— — —) is directly connected with AC main voltage.

POWER PWB-B

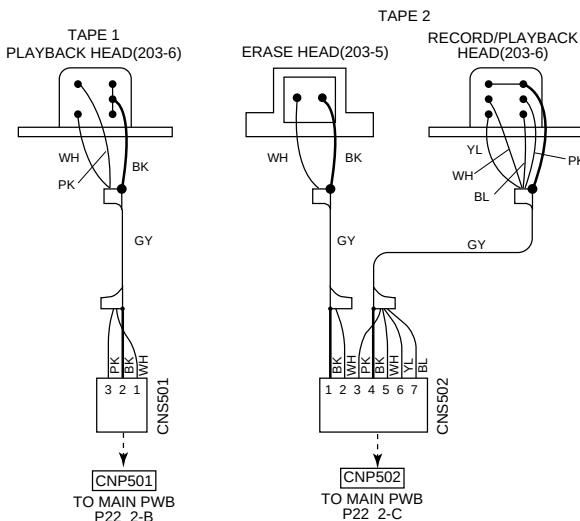
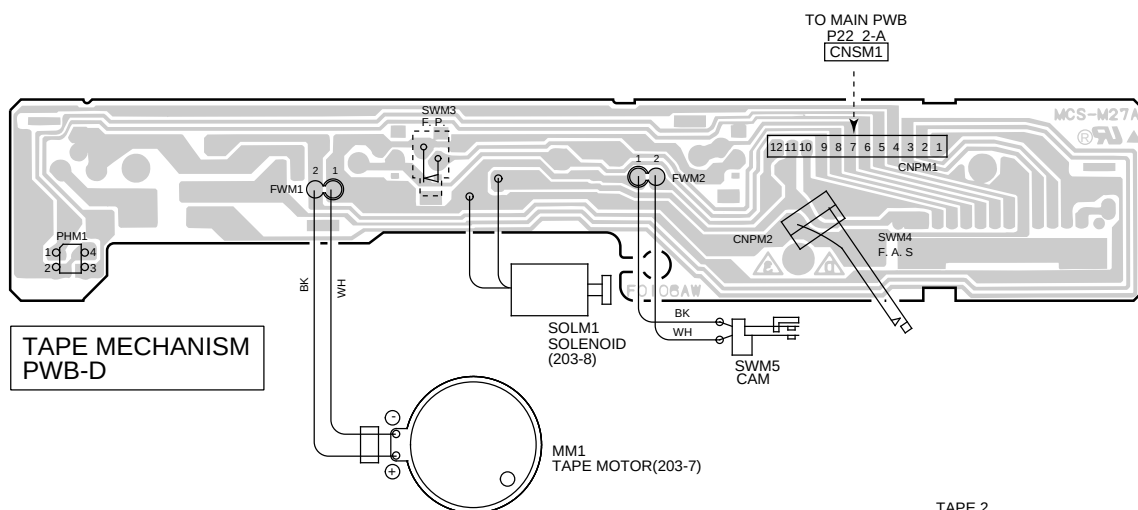
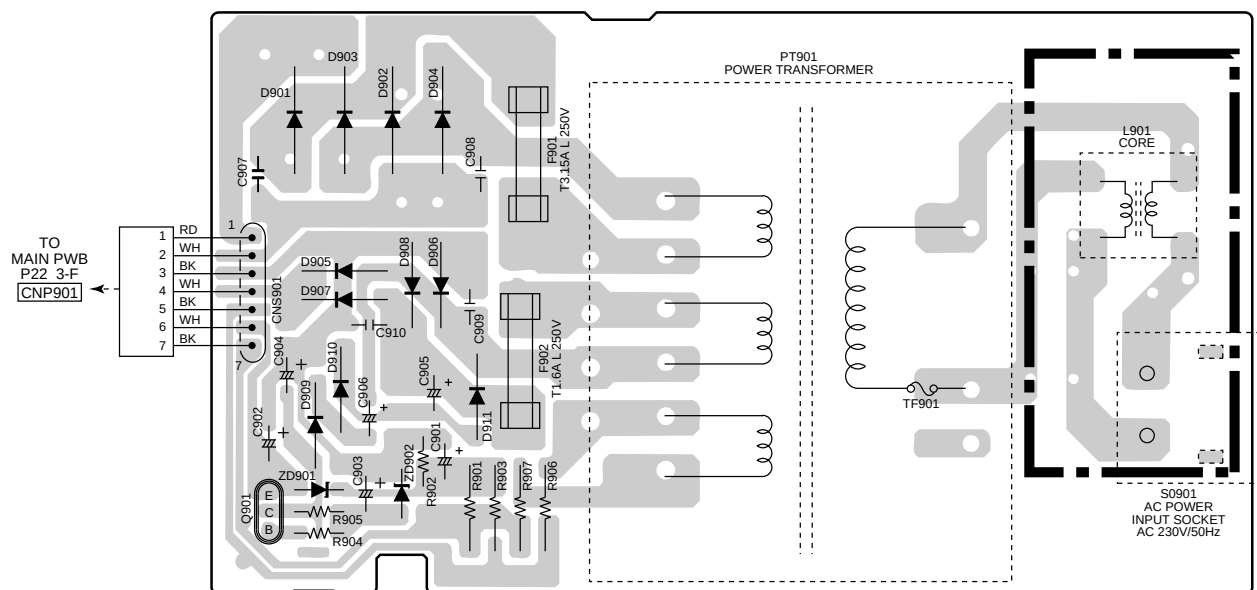
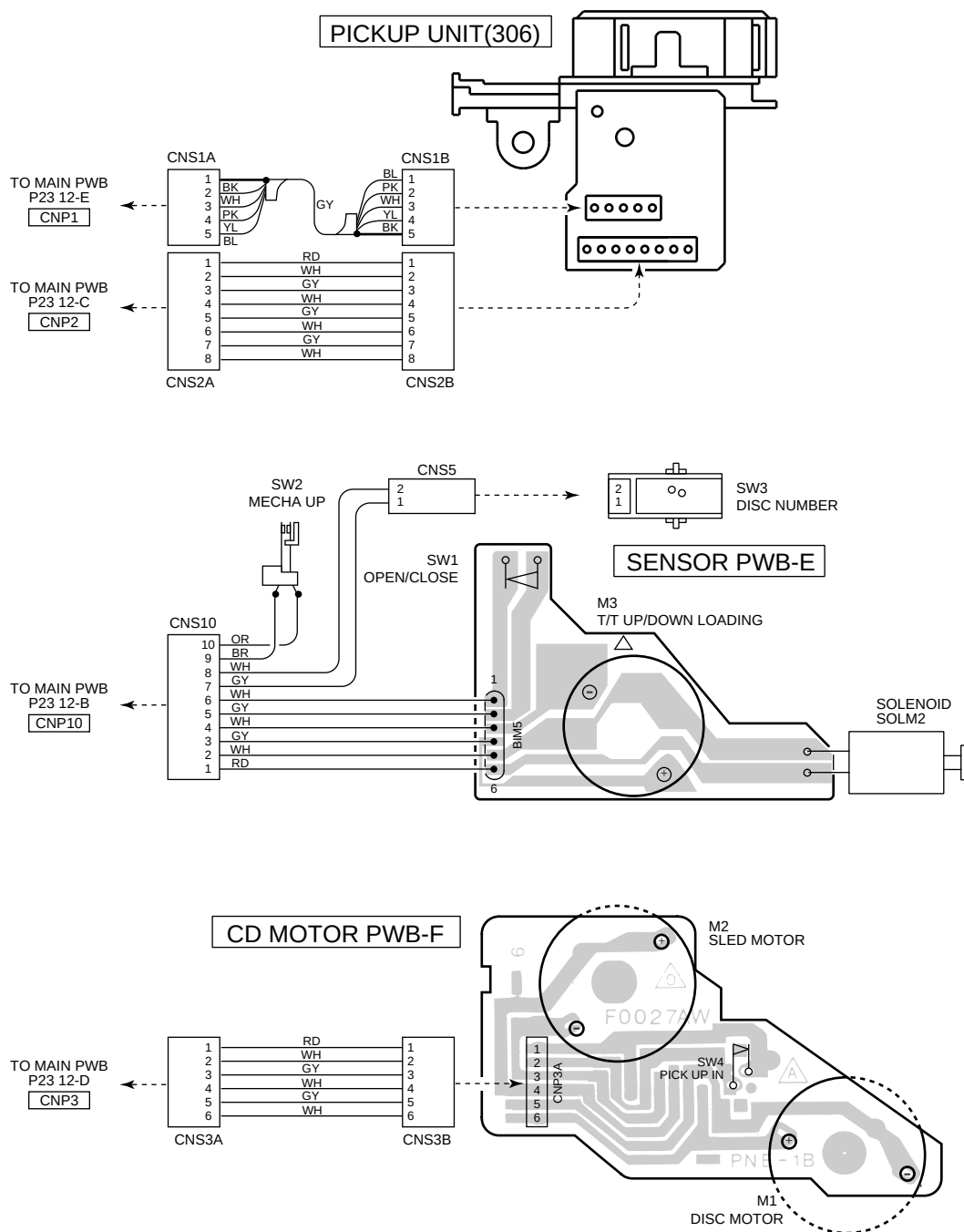


Figure 24 WIRING SIDE OF P.W.BOARD (4/6)



TUNER PWB-C

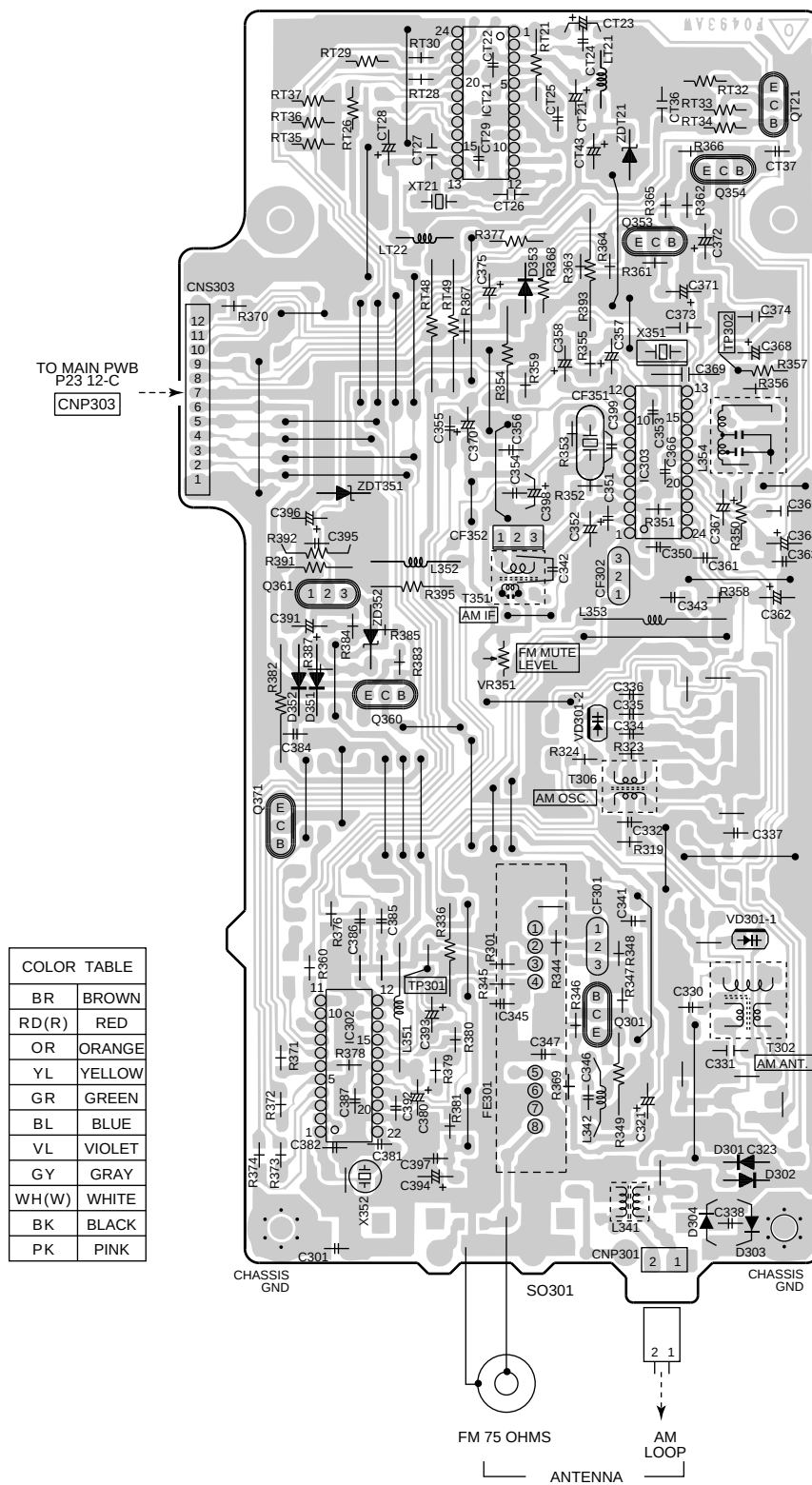


Figure 26 WIRING SIDE OF P.W.BOARD (6/6)

IC1		IC2		IC5		IC501		IC303		IC401		IC701			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE	PIN NO.	VOLTAGE	PIN NO.	VOLTAGE	PIN NO.	VOLTAGE	PIN NO.	VOLTAGE	PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	2V	1	0V	1	2V	1	0V	1	2V(2V)	1	5V	1	-24.7V	41	0.41V
2	2V	2	0V	2	2V	2	0V	2	2V(2V)	2	5V	2	-24.7V	42	0V
3	2.1V	3	0V	3	0V	3	0.6V	3	7.2V(8.2V)	3	5V	3	-24.7V	43	0V
4	2.1V	4	0V	4	2V	4	3V	4	0.5V(0.8V)	4	5V	4	-24.7V	44	4.4V
5	2V	5	1.8V	5	2V	5	0V	5	2V(2V)	5	5V	5	-24.7V	45	0V
6	2V	6	4V	6	2.2V	6	1.3V	6	0V(0V)	6	5V	6	-24.7V	46	4.4V
7	2V	7	0V	7	2.2V	7	0V	7	5.5V(5.5V)	7	5V	7	-24.7V	47	4.4V
8	2V	8	0V	8	0V	8	0.6V	8	0V(0V)	8	5V	8	4.4V	48	0V
9	2V	9	2V	9	0V	9	3V	9	2.6V(2.6V)	9	5V	9	0V	49	2.7V
10	2V	10	2V	10	0V	10	3V	10	2.6V(2.6V)	10	5V	10	4.4V	50	11.7V
11	2V	11	0V	11	0V	11	0V	11	6.3V(8.2V)	11	5V	11	4.4V	51	11.7V
12	2V	12	0V	12	0V	12	0V	12	1.2V(1.2V)	12	5V	12	0.24V	52	4.4V
13	2V	13	0V	13	2.2V	13	6V	13	1.4V(0V)	13	5V	13	0V	53	4.4V
14	2V	14	4V	14	0V	14	3.7V	14	2.2V(2V)	14	5V	14	4.4V	54	4.4V
15	2V	15	0V	15	2V	15	0V	15	1.3V(1.4V)	15	5.1V	15	4.4V	55	0V
16	2V	16	0V	16	0V	16	3V	16	2V(1.9V)	16	4.7V	16	0.12V	56	0V
17	2V	17	4V	17	0V	17	0.6V	17	2V(2V)	17	4.7V	17	0V	57	4.4V
18	2V	18	4V	18	0V	18	0V	18	1.6V(1.6V)	18	0V	18	4.4V	58	0V
19	2V	19	0V	19	0.7V	19	0.8V	19	0.6V(0.7V)	19	4.7V	19	0V	59	0V
20	2V	20	0V	20	5.2V	20	0V	20	7.2V(8.2V)	20	0V	20	0V	60	0V
21	2V	21	2V	21	2V	21	3V	21	7.2V(8.2V)	21	4.7V	21	0V	61	-21.2V
22	0V	22	0V	22	2V	22	0.6V	22	2V(2V)	22	0V	22	3.8V	62	-18V
23	2V	23	4V	23	2V	23	0V	23	2V(2V)	23	0V	23	0V	63	-11.5V
24	2V	24	0V	24	2V	24	0V	24	2V(2V)	24	4.4V	24	0V	64	-27.8V
25	2V	25	0V	25	2.2V	25	0V	25	2V(2V)	25	0V	25	4.4V	65	-24.5V
26	2V	26	0V	26	0V	26	0V	26	0V	26	0V	26	4.4V	66	-14.8V
27	2V	27	0V	27	0V	27	0V	27	0V	27	0V	27	4.4V	67	-24.5V
28	2V	28	0V	28	0V	28	0V	28	4.7V	28	4.7V	28	0.6V	68	-21.2V
29	2V	29	0V	29	0V	29	0V	29	0V	29	0V	29	4.4V	69	-27.8V
30	1.8V	30	4V	30	2.2V	30	2.2V	30	4.7V	30	4.7V	30	0V	70	-18V
31	1.8V	31	2V	31	2.2V	31	2.2V	31	0V	31	0V	31	4.4V	71	-28V
32	0V	32	0V	32	2V	32	2V	32	4.7V	32	4.7V	32	0V	72	-11.5V
33	0V	33	0V	33	2V	33	2V	33	4.7V	33	4.7V	33	2V	73	-24.4V
34	4V	34	0V	34	0V	34	0V	34	5.1V	34	5.1V	34	2V	74	-24.4V
35	4V	35	4V	35	4V	35	0V	35	5.1V	35	5.1V	35	0V	75	14.7V
36	0V	36	3.8V	36	3.8V	36	5V	36	5.1V	36	5.1V	36	0V	76	-27.8V
37	0V	37	1.7V	37	1.7V	37	0V	37	5.1V	37	5.1V	37	0V	77	-24.4V
38	4V	38	0V	38	0V	38	0V	38	5.1V	38	5.1V	38	4.4V	78	-27.8V
39	0V	39	0V	39	0V	39	0V	39	5.1V	39	5.1V	39	4.4V	79	-27.8V
40	0V	40	1.7V	40	1.7V	40	0V	40	5.1V	40	5.1V	40	0V	80	-24.8V
41	0.3V	41	4V	41	4V	41	0V	41	5.1V	41	5.1V	41	0V		
42	2V	42	4V	42	4V	42	0V	42	5.1V	42	5.1V	42	0V		
43	2.1V	43	4V	43	4V	43	0V	43	5.1V	43	5.1V	43	0V		
44	2.1V	44	1.8V	44	1.8V	44	0V	44	5.1V	44	5.1V	44	0V		
45	0V	45	1.7V	45	1.7V	45	0V	45	5.1V	45	5.1V	45	0V		
46	2V	46	0V	46	0V	46	0V	46	5.1V	46	5.1V	46	0V		
47	2V	47	0V	47	0V	47	0V	47	5.1V	47	5.1V	47	0V		
48	0V	48	1.8V	48	1.8V	48	0V	48	5V	48	5V	48	0V		
49	0V	49	0V	49	0V	49	0V	49	5.1V	49	5.1V	49	0V		
50	2V	50	2V	50	2V	50	0V	50	5.1V	50	5.1V	50	0V		
51	4V	51	0V	51	0V	51	0V	51	5.1V	51	5.1V	51	0V		
52	4V	52	2V	52	2V	52	0V	52	5.1V	52	5.1V	52	0V		
53	0V	53	0V	53	0V	53	0V	53	5.1V	53	5.1V	53	0V		
54	4V	54	0V	54	0V	54	0V	54	0V	54	0V	54	0V		
55	4V	55	0V	55	0V	55	0V	55	5.1V	55	5.1V	55	0V		
56	4V	56	4.4V	56	4.4V	56	0V	56	5.1V	56	5.1V	56	0V		
57	2.1V	57	4.4V	57	4.4V	57	0V	57	10.2V	57	10.2V	57	0V		
58	2.1V	58	4.4V	58	4.4V	58	0V	58	5.1V	58	5.1V	58	0V		
59	0V	59	0V	59	0V	59	0V	59	0V	59	0V	59	0V		
60	0V	60	1.6V	60	1.6V	60	0V	60	5.1V	60	5.1V	60	0V		
61	2V	61	2V	61	2V	61	0V	61	5.1V	61	5.1V	61	0V		
62	3.4V	62	0V	62	0V	62	0V	62	5.1V	62	5.1V	62	0V		
63	0V	63	0V	63	0V	63	0V	63	5.1V	63	5.1V	63	0V		
64	4V	64	0V	64	0V	64	0V	64	5.1V	64	5.1V	64	0V		

():AM
OTHER:FM(ST)

IC302	
PIN NO.	VOLTAGE
1	2.6V
2	0V
3	0V
4	0V
5	4.8V
6	0.5V(5V)
7	0.3V(12.3V)
8	12V(0V)
9	0.4V(0V)
10	4V(0V)
11	5.1V(5.1V)
12	0V
13	0V
14	0V
15	0V(2.5V)
16	2.5V(0V)
17	5.1V
18	0.9V
19	0.9V
20	1.9V(1.1V)
21	0V
22	2.6V

IC303	
PIN NO.	VOLTAGE
1	2.2V
2	5.1V
3	2.2V
4	2.2V
5	0V
6	5.0V
7	5.1V
8	2.9V(3.6V)
9	5.1V
10	3.5V(0.3V)
11	3.9V(1.9V)
12	3.9V(1.2V)
13	4.0V
14	1.4V
15	1.4V
16	2.2V
17	2.4V(0V)
18	2.4V(0.9V)
19	0V(1.9V)
20	0.9V(0.9V)
21	2.5V(2.1V)
22	2.5V(2.1V)
23	5.1V(5.1V)
24	3.6V(3.6V)

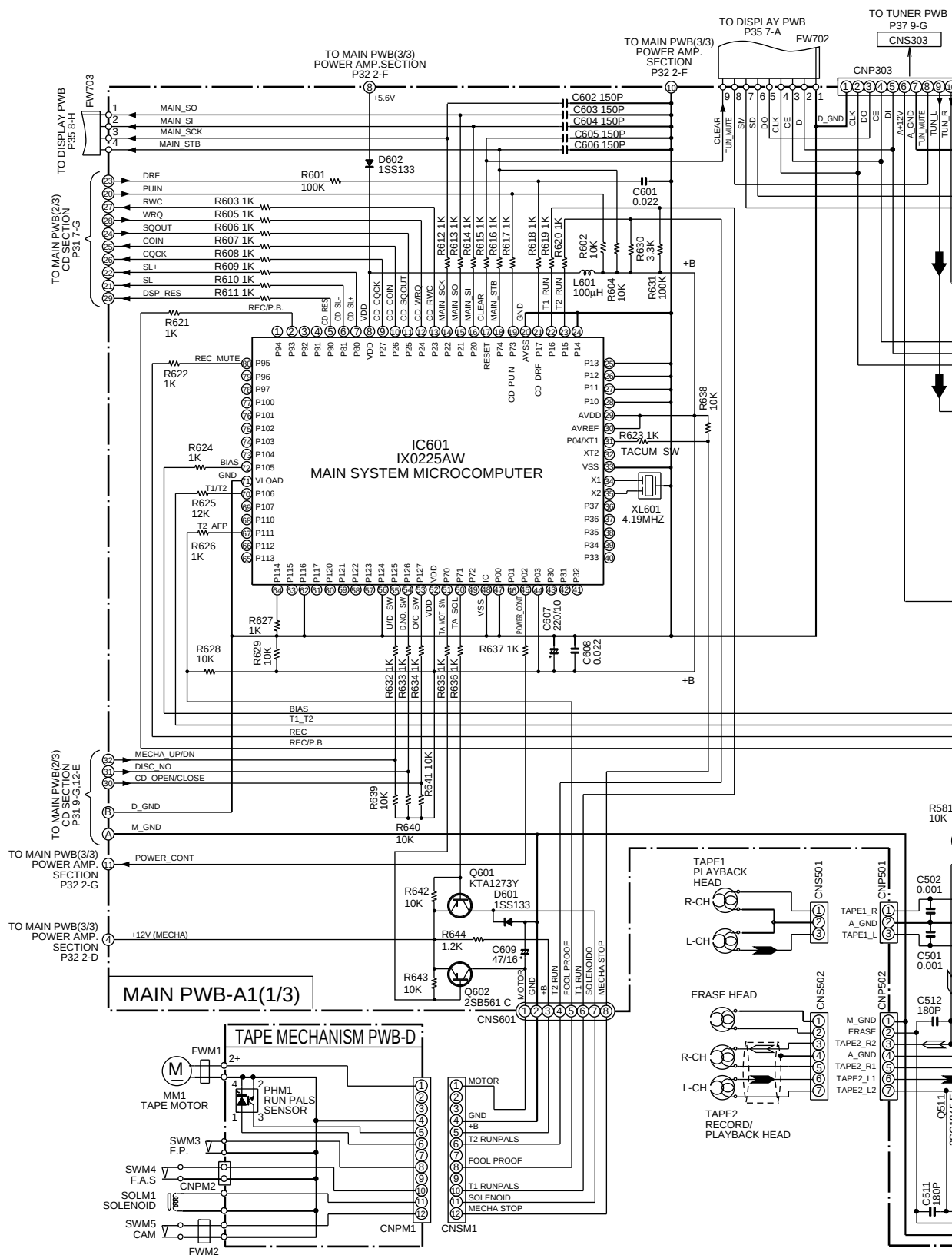
ICT21	
PIN NO.	VOLTAGE
1	2.6V(0.2V)
2	2.6V(0V)
3	5.2V(0V)
4	0V(0V)
5	2.6V(0V)
6	2.6V(0V)
7	0V(0V)
8	0V(0V)
9	0V
10	0V
11	0V
12	2.6V(0V)
13	2.7V(0V)
14	5.2V(0V)
15	0V(0V)
16	0V
17	0V
18	0V
19	0V(0.6V)
20	0V(5V)
21	4.8V(4.8V)
22	0V(0V)
23	0V(0V)
24	0V(0V)

IC961	
PIN NO.	VOLTAGE
1	24.7V
2	14.19V
3	0V
4	0V
5	14.05V
6	24.8V
7	27.8V(C411H)/31.8V(C421H)
8	1.24V
9	5.3mV
10	26.7V
11	0V
12	2.25V
13	5.2mV
14	1.23V

IC941	
PIN NO.	VOLTAGE
1	17.2V
2	0V
3	12V

IC942	
PIN NO.	VOLTAGE
1	17.2V
2	0V
3	5V

Figure 27 SCHEMATIC DIAGRAM (1/11)



• NOTES ON SCHEMATIC DIAGRAM can be found on page 16.

Figure 28 SCHEMATIC DIAGRAM (2/11)

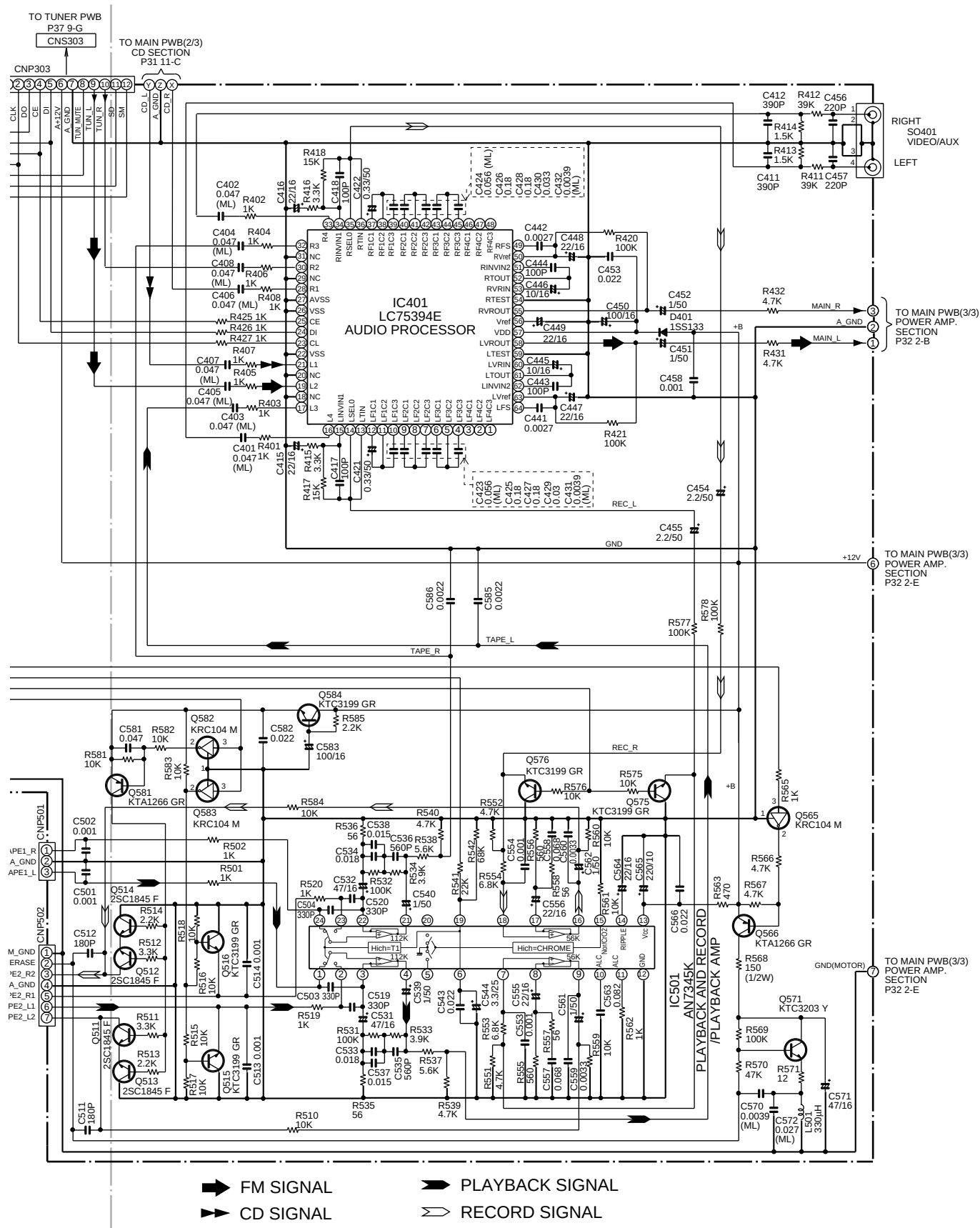


Figure 29 SCHEMATIC DIAGRAM (3/11)

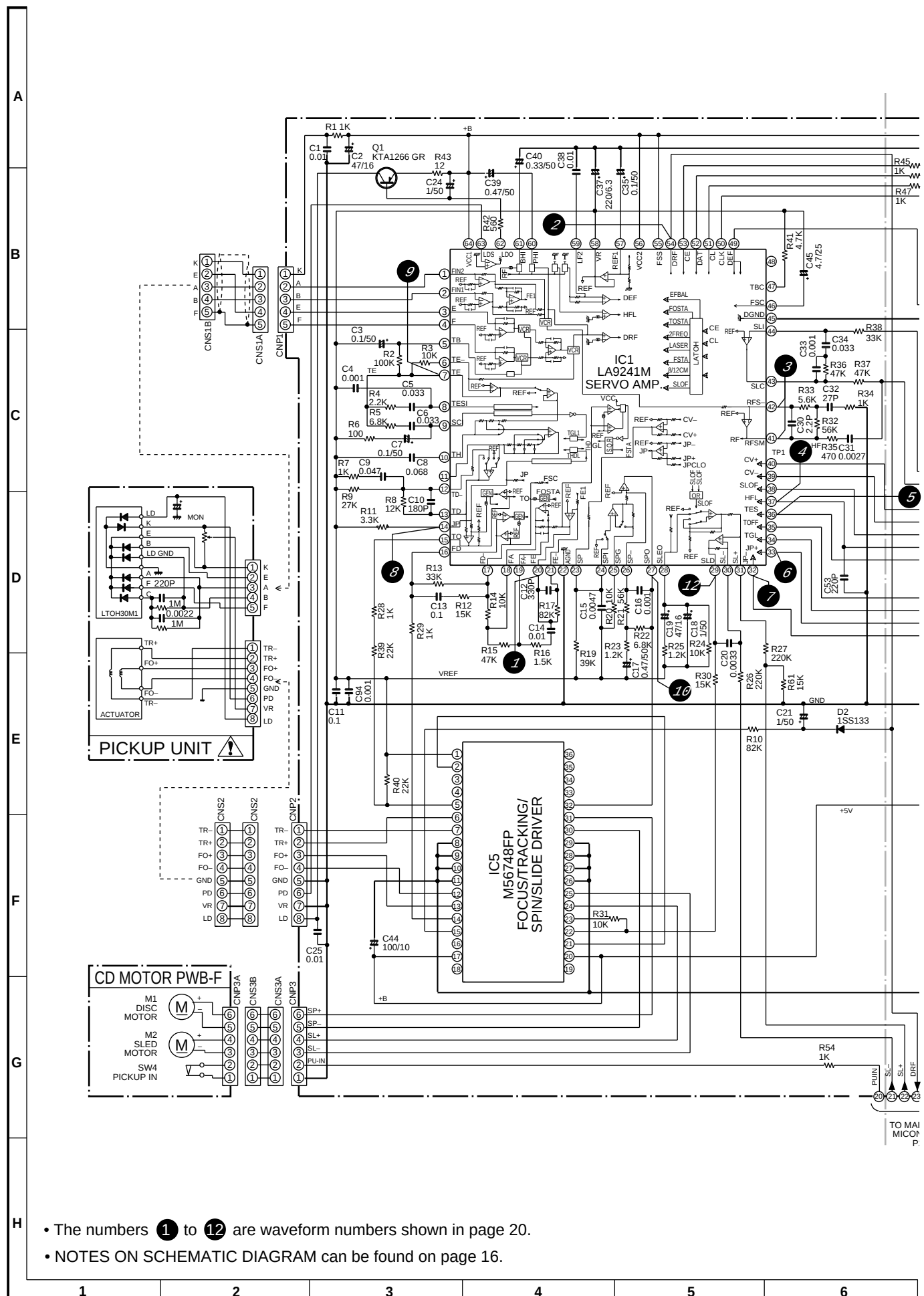
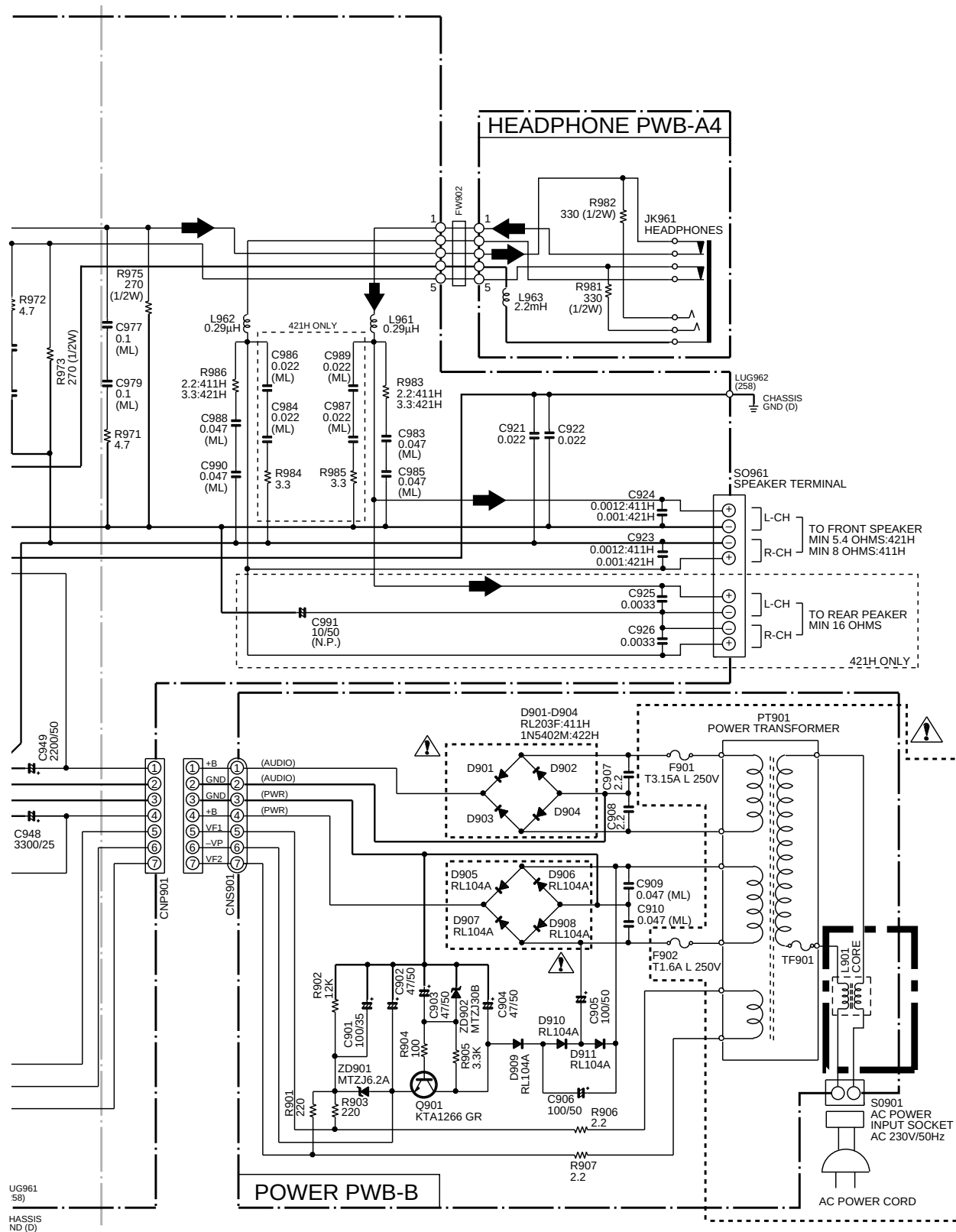


Figure 30 SCHEMATIC DIAGRAM (4/11)

- 31 -



– 32 –



When Servicing, pay attention as the area enclosed by this line (— ■ —) is directly connected with AC main voltage.

Figure 33 SCHEMATIC DIAGRAM (7/11)

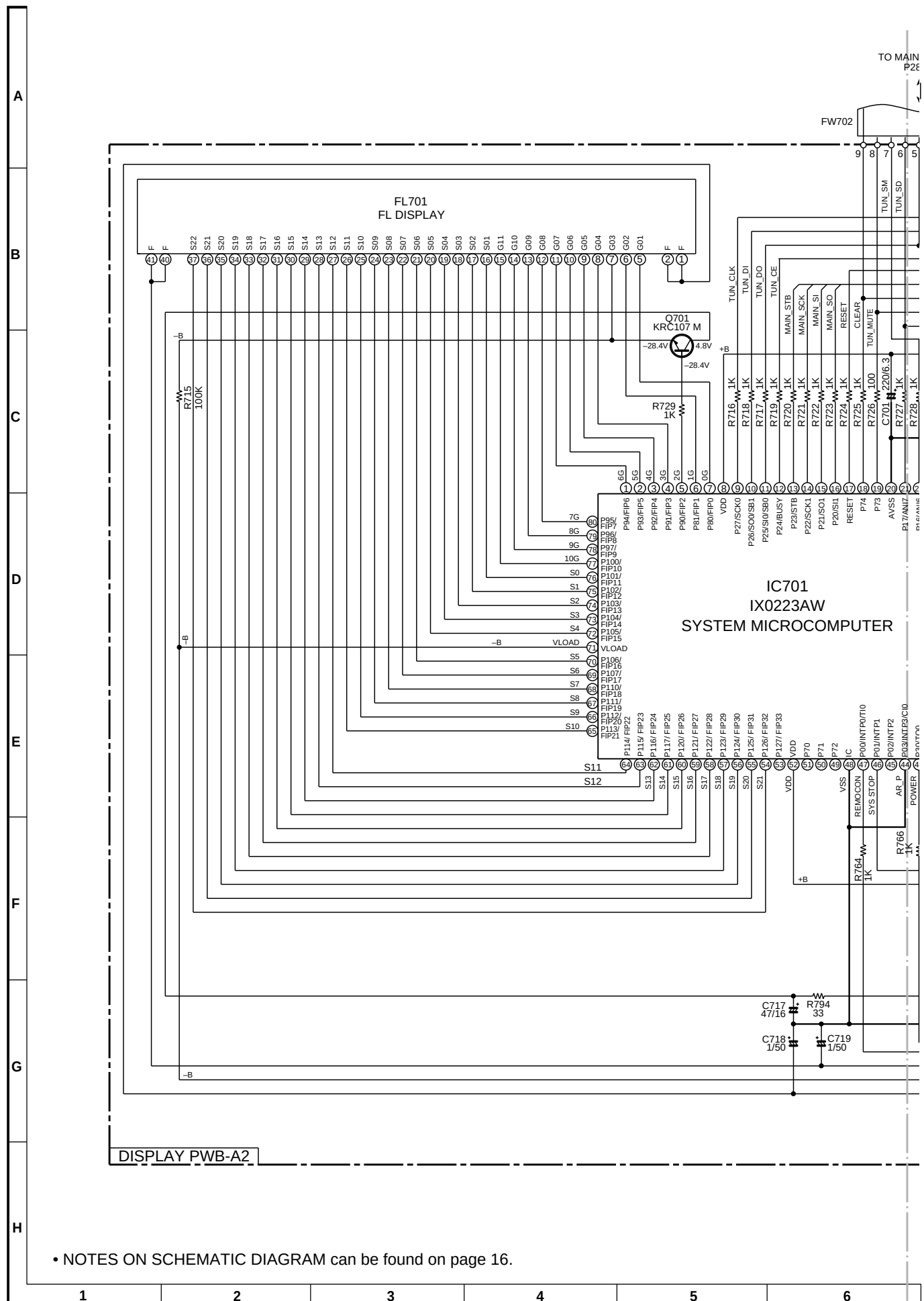


Figure 34 SCHEMATIC DIAGRAM (8/11)

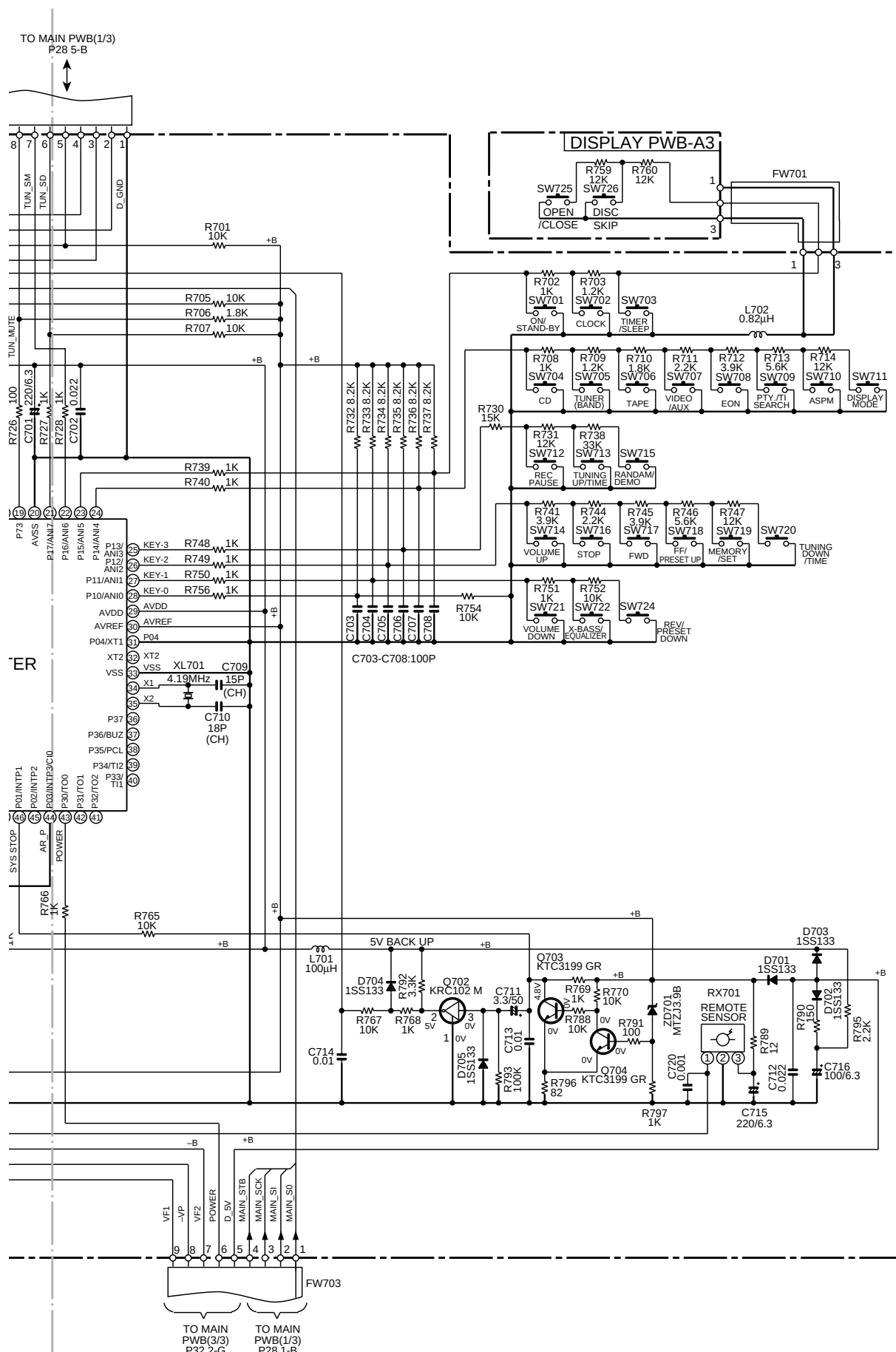


Figure 35 SCHEMATIC DIAGRAM (9/11)

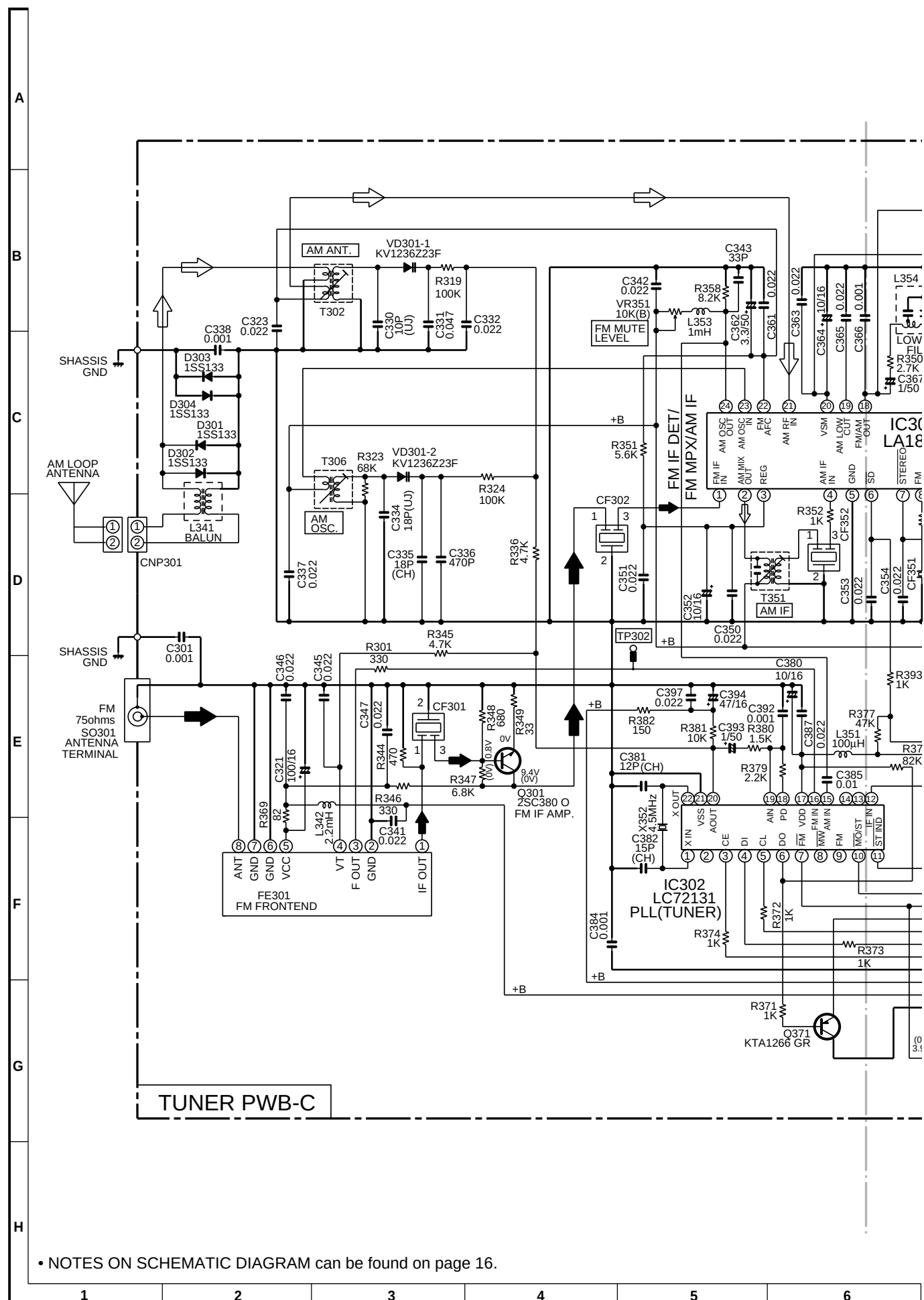


Figure 36 SCHEMATIC DIAGRAM (10/11)

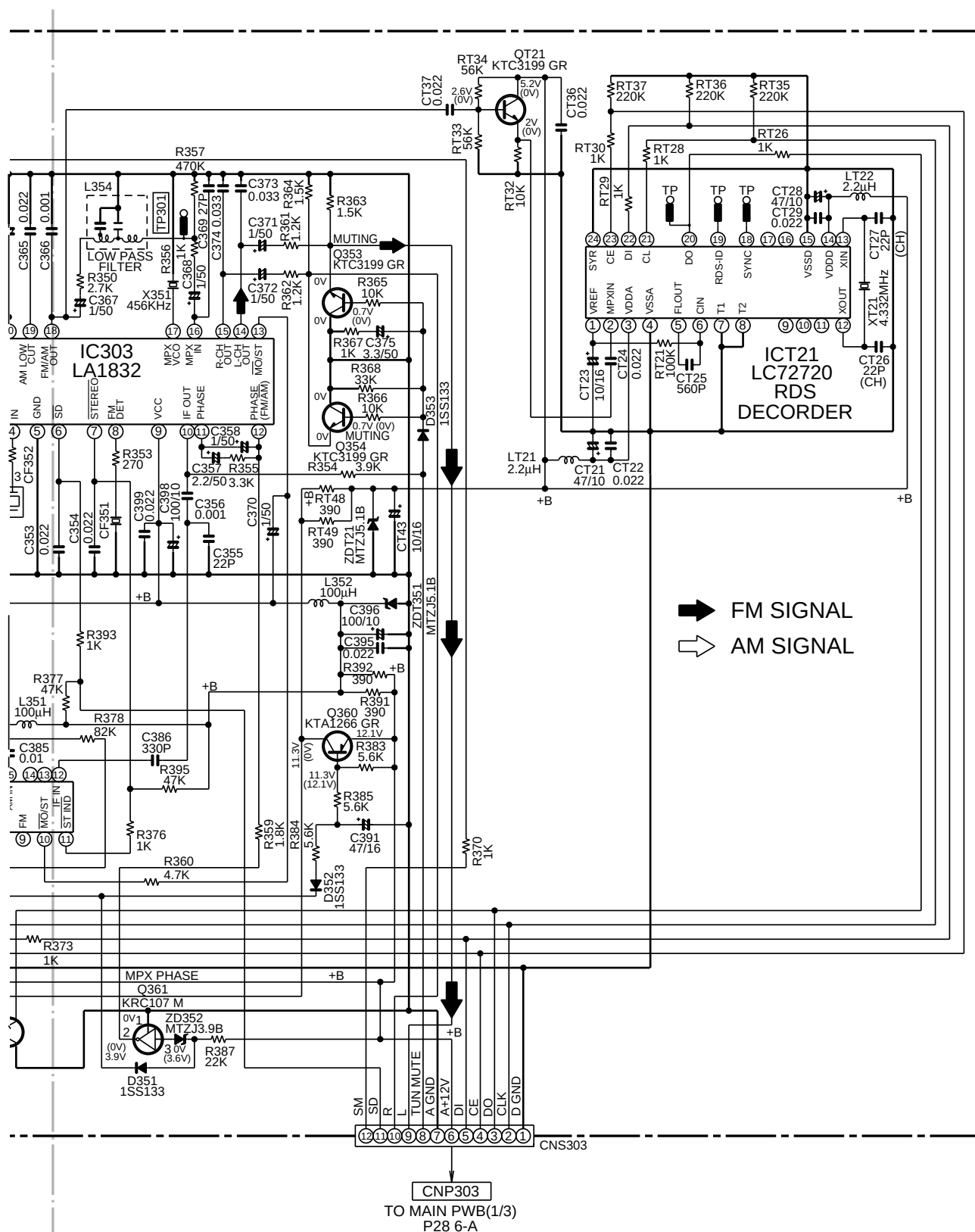


Figure 37 SCHEMATIC DIAGRAM (11/11)

TROUBLESHOOTING (CD SECTION)

When the CD does not function

When the CD section does not operate When the objective lens of the optical pickup is dirty, this section may not operate. Clean the objective lens, and check the playback operation. When this section does not operate even after the above step is taken, check the following items.

Remove the cabinet and follow the troubleshooting instructions.

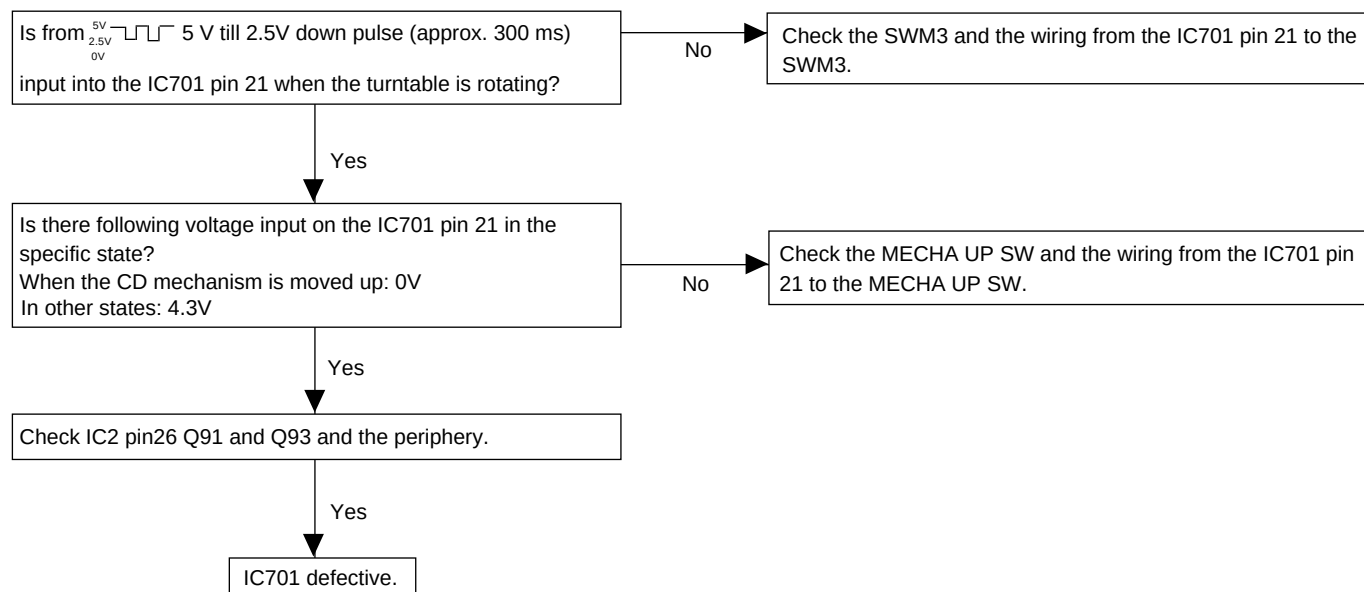
"Track skipping and/or no TOC (Table Of Contents) may be caused by build up of dust or other foreign matter on the laser pickup lens. Before attempting any adjustment make certain that the lens is clean. If not, clean it as mentioned below."

Turn the power off.

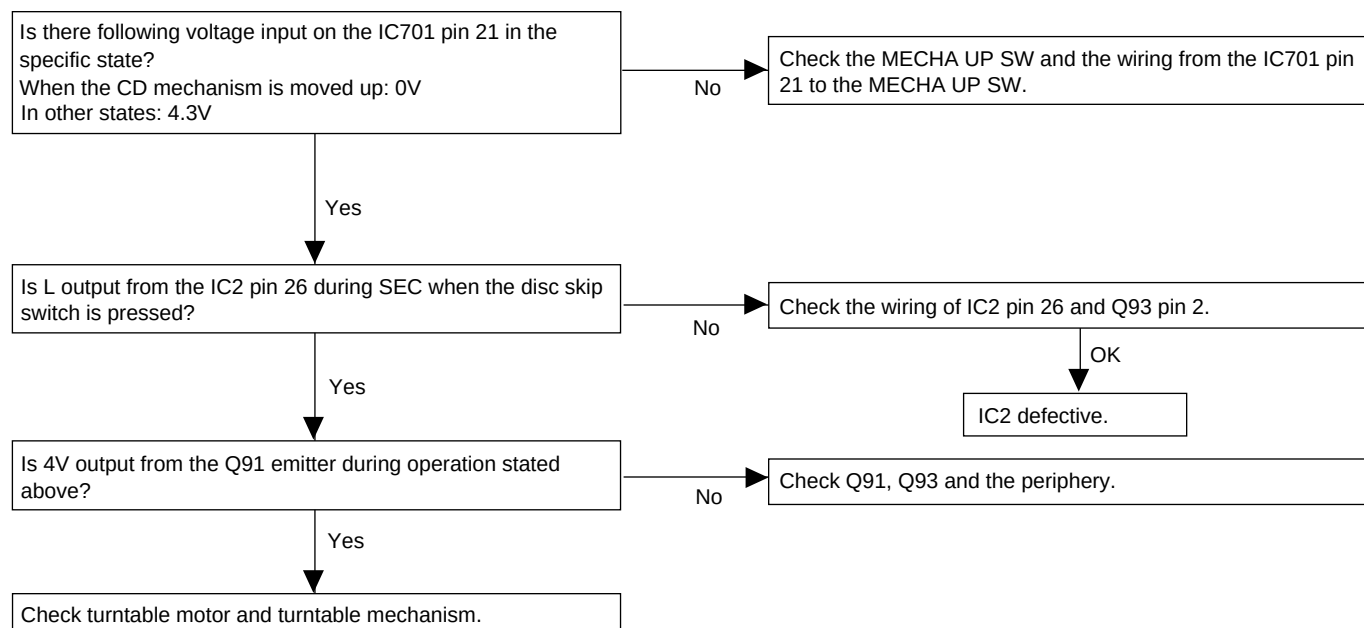
Gently clean the lens with a lens cleaning tissue and a small amount of isopropyl alcohol.

Do not touch the lens with the bare hand.

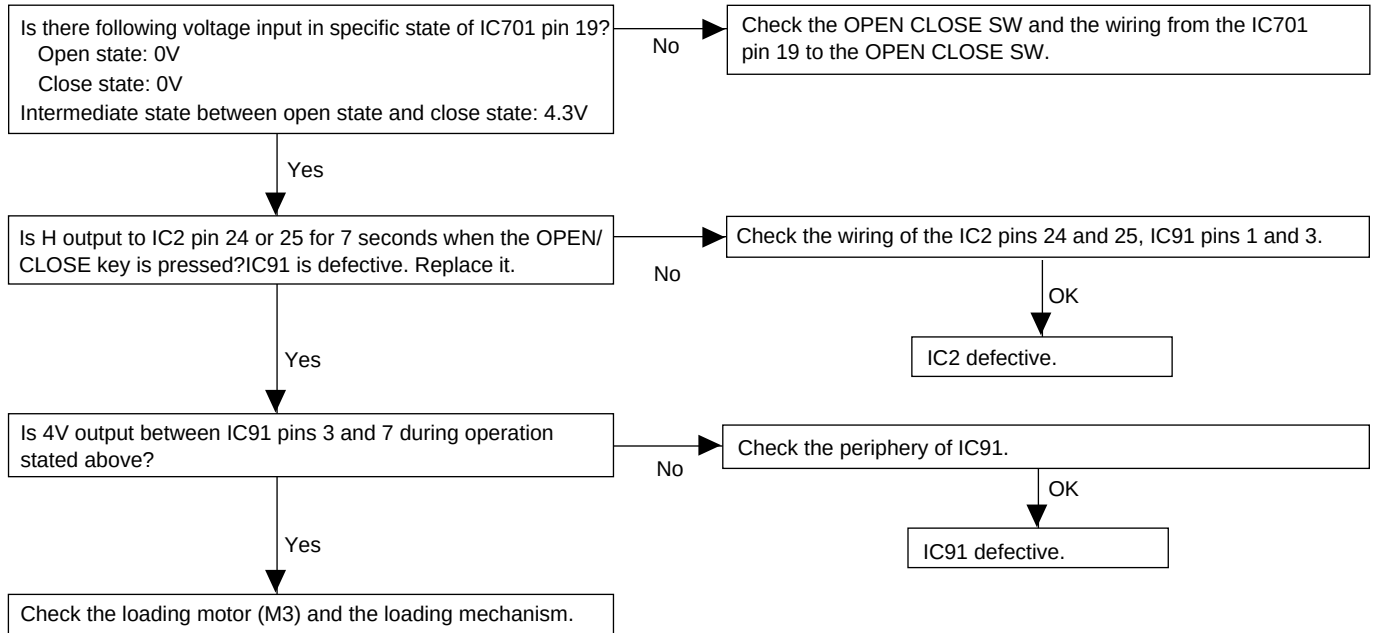
• When the turntable fails to stop.



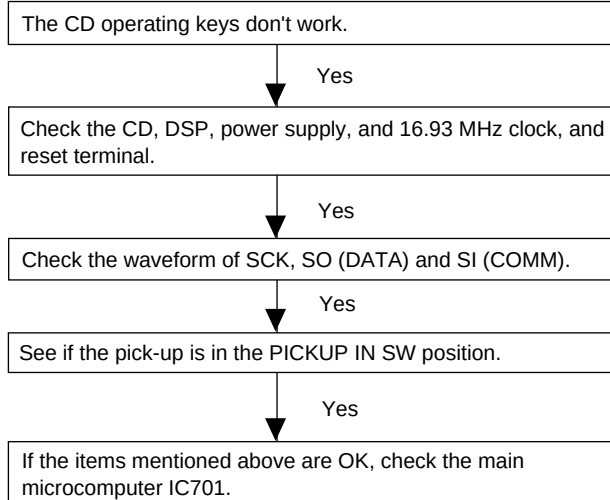
• When turntable fails to move.



• When the CD tray fails to open or close.



• The CD function will not work.



• The CD operating keys work.

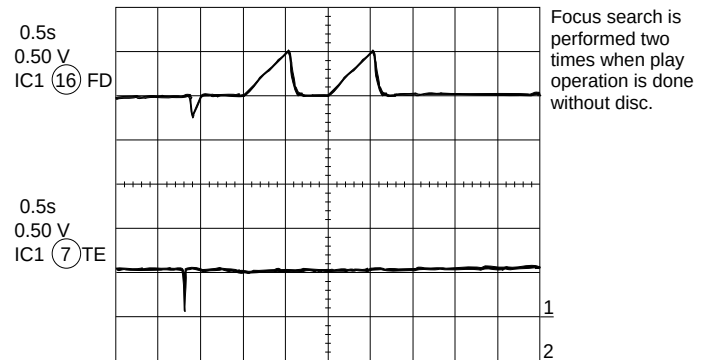
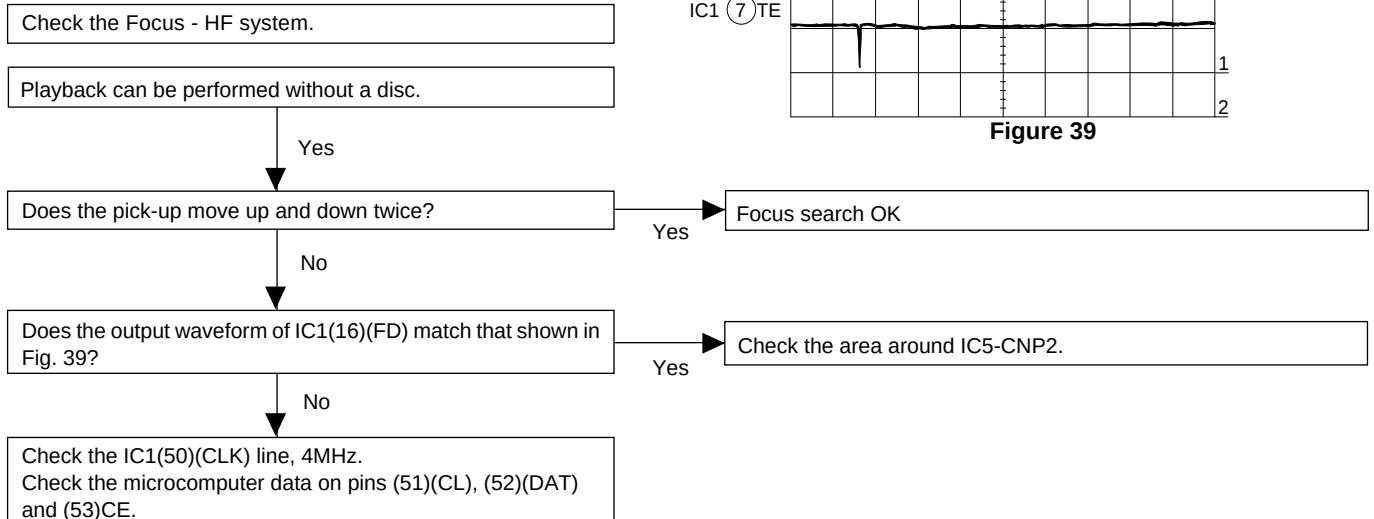


Figure 39

- Playback can only be performed when a disc is loaded.

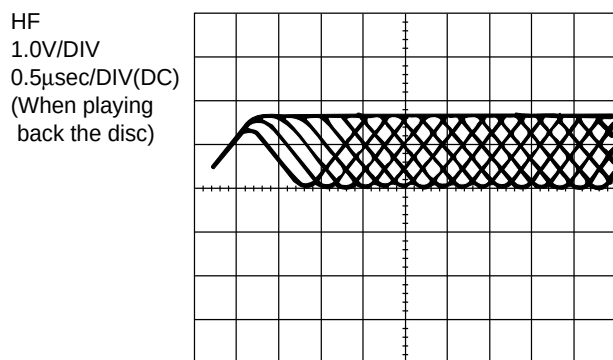
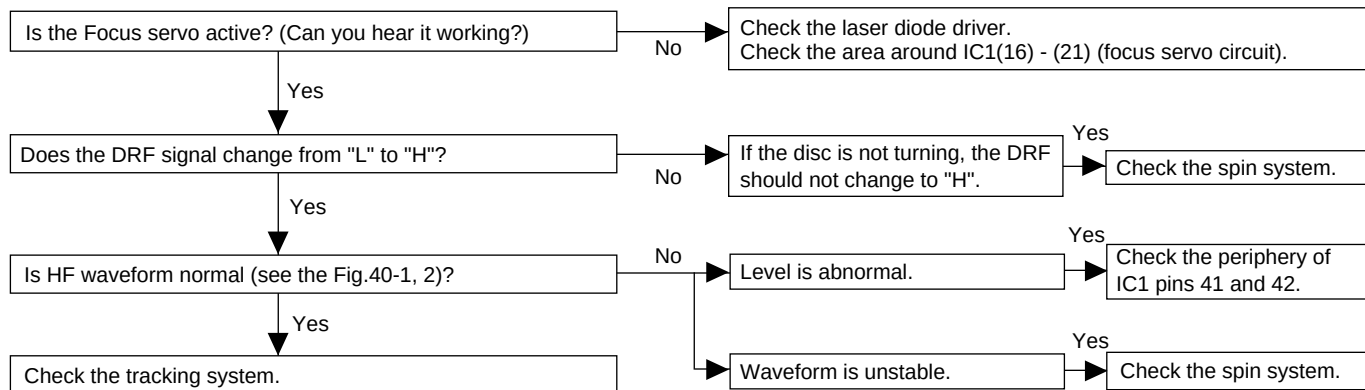


Figure 40-1

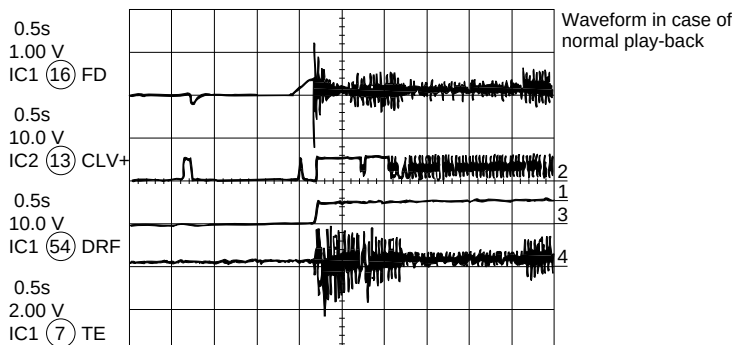


Figure 40-2

- Check the tracking system.

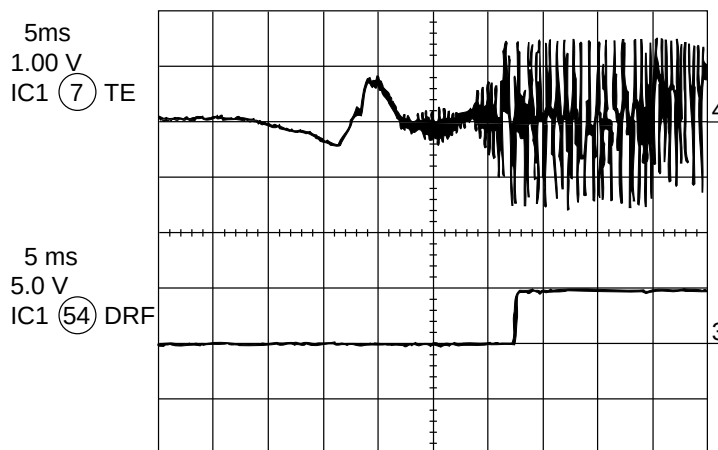
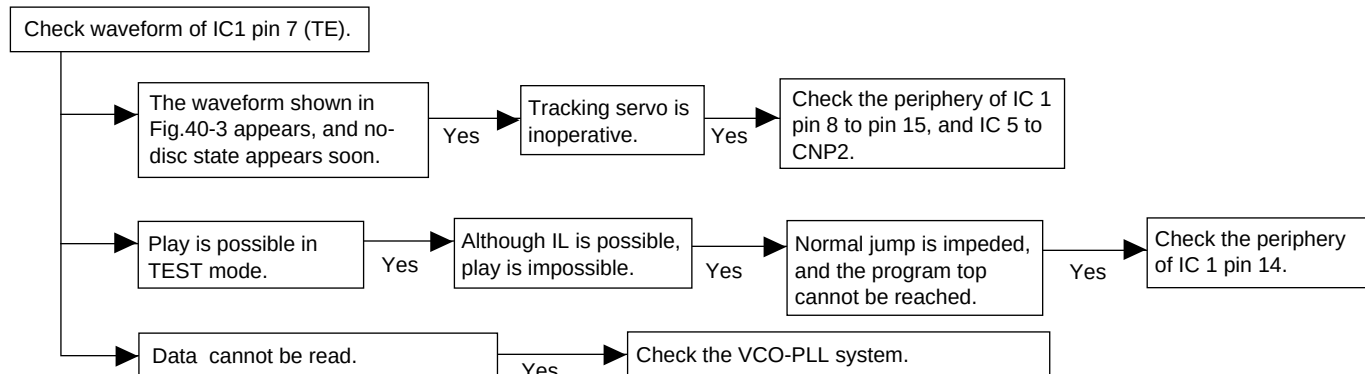


Figure 40-3

• Checking the spin system.

Play operation is performed without disc.

Yes

The turntable rotates a little.

Yes

The spin driver circuit is normal.

No

The turntable fails to rotate or rotates at high speed.

Yes

Check the periphery of IC1 pins 23 to 27, pin 39, and pin 40, IC2 pin 12 and pin 13, IC5 to CNP3.

• Checking the VCO-PLL system

Play operation is performed when disc exits.

Yes

Although HF waveform is normal, TOC data cannot be read.

Yes

Check PDO waveform (Fig. 41).

Abnormal

Check the IC1 pins 43 and 44, IC2 pins 3, 5, 7, 10, and 11.

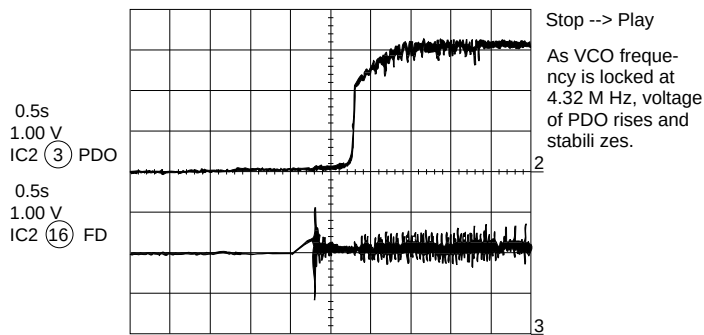


Figure 41

• Although HF waveform is normal and the time indication is normal, no sound is emitted.

Check IC 2 pin 48 (EFLG).

No

Usually, the number of pulses of flawless disc is 100 pulses/sec or less.

Yes

Check IC2 pins 37, 40.

Abnormal

Check IC 401 and POWER AMP IC 961.

FUNCTION TABLE OF IC

IC2 VHiLC78622K-1: Servo/Signal Control(LC78622K) (1/2)

Pin No.	Terminal Name	Input/Output	Function	
1	DEFI	Input	Input terminal of defect detection signal (DEF). (Connected to 0V when not used.)	
2	TAI	Input	For PLL	Input terminal for test. Pull-down resistor is integrated. Surely connected to 0V.
3	PDO	Output		Output terminal of phase comparison for external VCO control.
4	VVSS	—		Ground terminal for integrated VCO. Surely connected to 0V.
5	ISET	Input		Resistance connection terminal for current adjustment of PDO output.
6	VVDD	—		Power terminal for integrated VCO.
7	FR	Input		VCO frequency range adjustment.
8	VSS	—	Ground terminal of digital system. Surely connected to 0V.	
9	EFMO	Output	For slice level control	EFM signal output terminal.
10	EFMIN	Input		EFM signal input terminal.
11	TEST2	Input	Input terminal for test. Pull-down resistor is integrated. Surely connected to 0V.	
12	CLV+	Outout	Output for disk motor control. 3 values can be output with the commands.	
13	CLV-	Output	Output for disk motor control. 3 values can be output with the commands.	
14	V/P	Output	Monitor output terminal for automatic switch of rough servo/phase control. "H" for rough servo, and "L" for phase servo.	
15	HLF	Intput	Input terminal of track detection signal. Schmit input.	
16	TES	Input	Input terminal of tracking error signal. Schmit input.	
17	TOFF	Output	Tracking OFF output terminal.	
18	TGL	Output	Output terminal for switch of tracking gain "L" increases the gain.	
19	JP+	Output	Output for track jump control. 3 values can be output with the commands.	
20	JP-	Output	Output for track jump control. 3 values can be output with the commands.	
21*	PCK	Output	Clock monitor terminal for EFM data replay. 4,3218MHz as the phase clock.	
22*	FSEQ	Output	Output terminal synchronous signal detection. "H" is output when synchronous signal detected by EFM signal matches synchronous signal internally generated.	
23	VDD	—	Power terminal of digital system.	
24	CONT1	Input/Output	General purpose input/output terminal 1	Controlled with serial data command from micro computer. When not used, set it as the input terminal and open it by connecting to 0V, or set it as the output terminal and open it.
25	CONT2	Input/Output	General purpose input/output terminal 2	
26	CONT3	Input/Output	General purpose input/output terminal 3	
27*	CONT4	Input/Output	General purpose input/output terminal 4	
28*	CONT5	Input/Output	General purpose input/output terminal 5	
29*	EMPH	Output	Difference monitor terminal At "H", deemphasis disk is being replayed.	
30*	C2F	Output	C2 flag output terminal.	
31*	DOUT	Output	Output terminal of digital OUTPUT. (EIAJ format)	
32	TEST3	Input	Input terminal for test. Pull-down resistor is integrated. Surely connected to 0V.	
33	TEST4	Input	Input terminal for test. Pull-down resistor is integrated. Surely connected to 0V.	
34	N.C.	—	Terminal not used. Open during operation.	
35*	MUTEL	Output	L channel 1 bit DAC	Mute output terminal for L channel.
36	LVDD	—		Power terminal for L channel.
37	LCHO	Output		L channel output terminal.
38	LVSS	—		Ground terminal for L channel Surely connected to 0V.
39	RVSS	—	R channel 1 bit DAC	Ground terminal for R channel Surely connected to 0V.
40	RCHO	Output		R channel output terminal.
41	RVDD	—		Power terminal for R channel.
42*	MUTER	Output		Mute output terminal for R channel.
43	XVDD	—	Power terminal for quartz oscillation.	
44	XOUT	Output	Ground terminal of 16.9344 MHz quartz oscillator.	
45	XIN	Input	Ground terminal of 16.9344 MHz quartz oscillator.	
46	XVSS	—	Ground terminal for quartz oscillation. Surely connected to 0V.	
47*	SBSY	Output	Output terminal of synchronous signal of subcode block.	
48*	EFLG	Output	Correction monitor terminal of C1, C2, single and double.	

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

VHiLC78622K-1:Servo/Signal Control(LC78622K) (2/2)

Pin No.	Terminal Name	Input/Output	Function
49*	PW	Output	Output terminal of subcodes P, A, R, S, T, U and W.
50*	SFSY	Output	Output terminal of synchronous signal of subcode frame. It drops when subcode stands by.
51	SBCK	Input	Clock input terminal to read subcode. Schmit input (Connected to 0V when not used.)
52*	FSX	Output	Output terminal of synchronous signal of 7.35kHz divided from quartz oscillation.
53	WRQ	Output	Output terminal to stand by output of subcode Q.
54	RWC	Input	Input terminal of read/write. Schmit input.
55	SQOUT	Output	Output terminal of subcode Q.
56	COIN	Input	Command input terminal from microcomputer.
57	CQCK	Input	Clock input terminal to fetch command input, or pick up subcode from SQOUT. Schmit input
58	RES	Input	Reset input terminal of LC78622. When turning on power, set it at "L".
59*	TEST11	Output	Output terminal for test. Used in the open state ("L" output as ordinary).
60*	16M	Output	Output terminal of 16.9344Hz.
61	4.2M	Output	Output terminal of 4.2336MHz.
62	TEST5	Input	Input terminal for test Pull-down resistor is integrated. Surely connected to 0V.
63	CS	Input	Chip selection input terminal. Pull-down resistor is integrated. Connected to 0 when not controlled.
64	TEST1	Input	Input terminal for test Pull-down resistor is integrated. Surely connected to 0V.

Note: The same potential must be supplied to the power terminals (VDD, VVDD, LVDD, RVDD, XVDD).

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

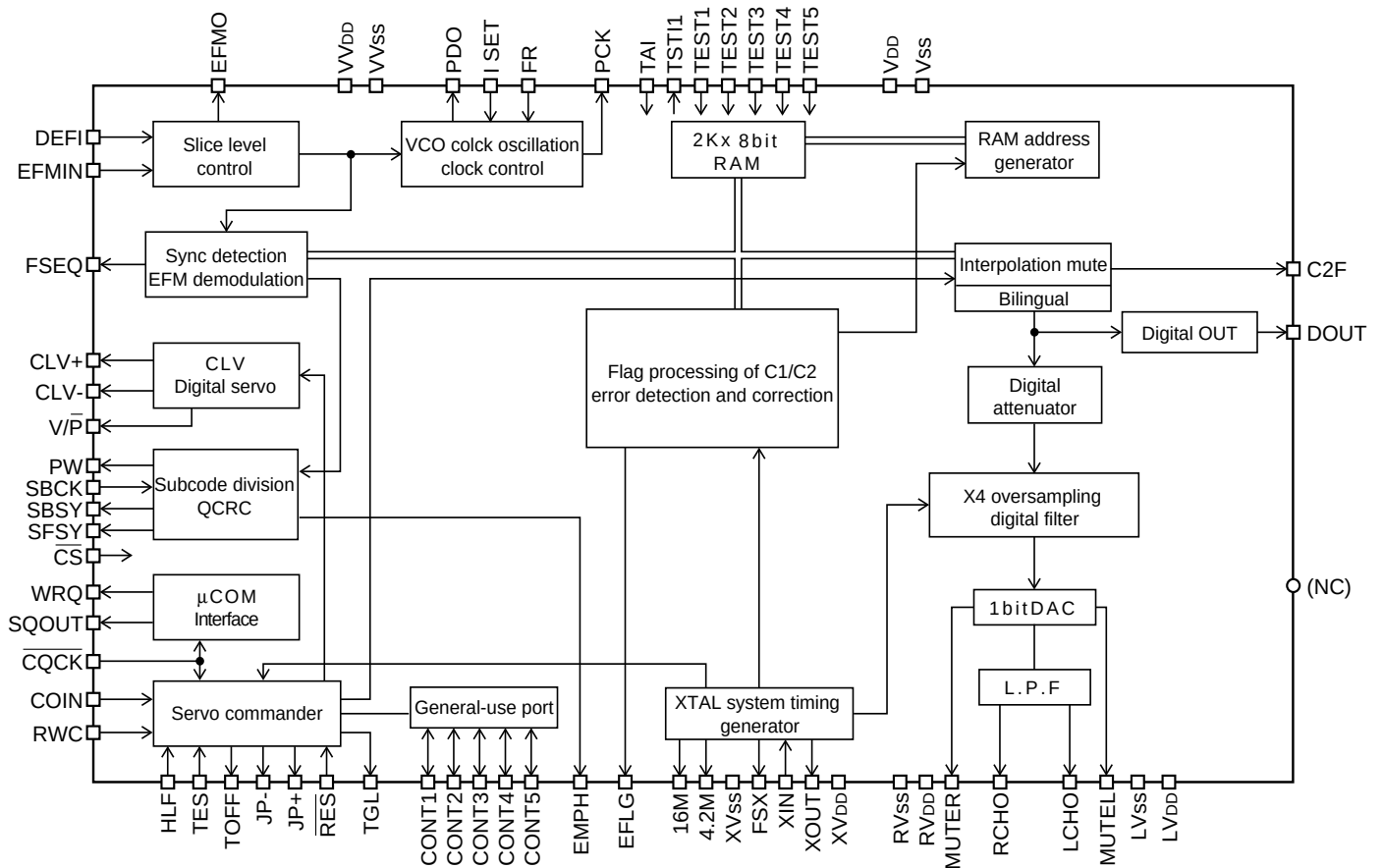


Figure 43 BLOCK DIAGRAM OF IC

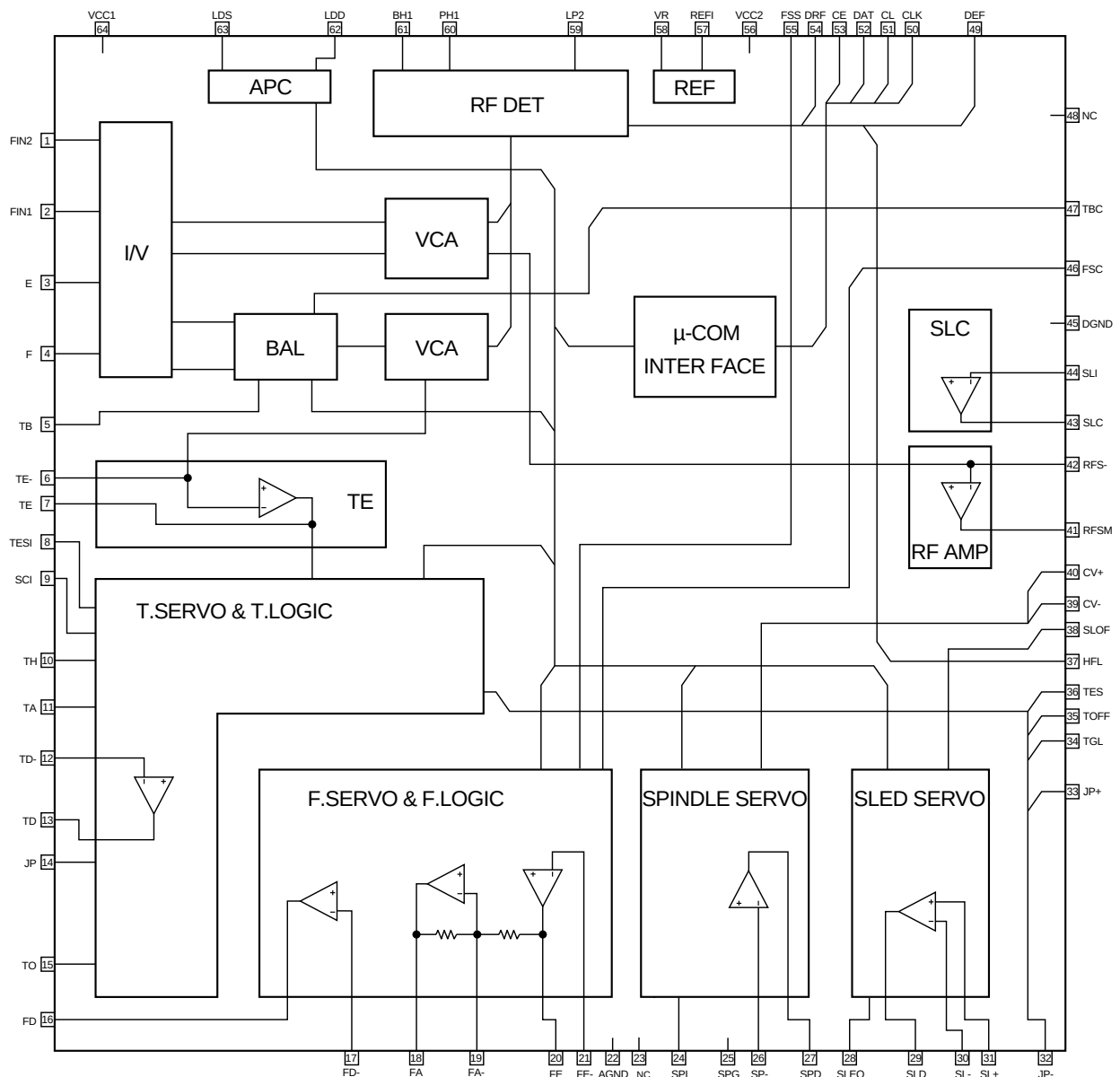
IC1 VHiLA9241M/-1: Servo Amp.(LA9241M) (1/2)

Pin No.	Port Name	Function
1	FIN2	Connection pin for photodiode of pickup. RF signal is generated through addition with FIN pin, and FE signal is generated through subtraction.
2	FIN1	Connection pin for photodiode of pickup.
3	E	Connection pin for photodiode of pickup. TE signal is generated through subtraction with F pin.
4	F	Connection pin for photodiode of pickup.
5	TB	Pin for input of DC component of TE signal.
6	TE-	Pin to connect gain setting resistor of TE signal to TE signal.
7	TE	TE signal output pin.
8	TESI	TES (Track error sense) comparator input pin. TE signal is band-passed and input.
9	SCI	Input pin for shock detection.
10	TH	Pin to set time constant of tracking gain.
11*	TA	TA amplifier output pin.
12	TD-	Pin to compose tracking phase compensation constant between TD and VR pins.
13	TD	Pin to set tracking phase compensation.
14	JP	Pin to set amplitude of tracking jump signal (kick pulse).
15	TO	Tracking control signal output pin.
16	FD	Focusing control signal output pin.
17	FD-	Pin to compose focusing phase compensation constant between FD and FA pins.
18	FA	Pin to compose focusing phase compensation constant between FD-/FA-pins.
19	FA-	Pin to compose focusing phase compensation constant between FA and FE pins.
20	FE	Output pin of FE signal.
21	FE-	Pin to connect gain setting resistor of FE signal across TE pin.
22	AGND	GND for analog signal.
23	SP	Single and output for CV+ and CV- pin input.
24	SPI	Spindle amplifier input.
25	SPG	Pin to connect gain setting resistor in the 12cm mode of spindle.
26	SP-	Pin to connect spindle phase compensation constant together with SPD pin.
27	SPO	Spindle control signal output pin.
28	SLEO	Pin to connect thread phase compensation constant.
29	SLD	Thread control signal output pin.
30	SL-	Input pin of thread feed signal from micro computer.
31	SL+	Input pin of thread feed signal from micro computer.
32	JP-	Input pin of tracking jump signal from DSP.
33	JP+	Input pin of tracking jump signal from DSP.
34	TGL	Input pin of tracking gain control signal from DSP. TGL = Gain low at "H"
35	TOFF	Input pin of tracking off control signal from DSP. TOFF = Off at "H"
36	TES	Output pin of TES signal to DSP.
37	HFL	(HIGH FREQUENCY LEVEL) is used to judge whether main beam is positioned on the bit or on the mirror.
38	SLOF	Thread servo off control input pin.
39	CV-	Pin to input CLV error signal from DSP.
40	CV+	Pin to input CLV error signal from DSP.
41	RFSM	RF output pin.
42	RFS-	Pin to set gain of RF and set 3T compensation constant together with RFSM pin.
43	SLC	(SLICE LEVEL CONTROL) is the output pin to control of the level of the data slice with RF waveform DSP.
44	SLI	Input pin to control the level of data slice with DSP.
45	DGND	GND pin in the digital system.
46	FSC	Output pin for focus search smoothening capacitor.
47	TBC	(Tracking Balance Control) Pin to set EF balance variable range.
48*	NC	No connect.
49	DEF	Defect detection output pin of disk.
50	CLK	Reference clock input pin. 4.23MHz of DSP is input.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1 VHiLA9241M/-1: Servo Amp.(LA9241M) (2/2)

Pin No.	Port Name	Function
51	CL	Micro computer command clock input pin.
52	DAT	Micro computer command data input pin.
53	CE	Micro computer command chip enable input pin.
54	DRF	(DETECT RF) RF level detection output.
55	FSS	(Focus Serch Select) Pin to switch focus search mode. ($\pm$ search/+ search for reference voltage)
56	VCC2	VCC pin for servo system and digital system.
57	REFI	Pin to connect pass control for reference voltage.
58	VR	Reference voltage output pin.
59	LF2	Pin to set defect detection time constant of disk.
60	PHI	Pin to connect capacitor for peak hold of RF signal.
61	BHI	Pin to connect capacitor for bottom hold of RF signal.
62	LDD	APC circuit output pin.
63	LDS	APC circuit output pin.
64	VCC1	RF system VCC pin.

**Figure 45 BLOCK DIAGRAM OF IC**

CD-C421H / C411H

IC601 RH-IX0225AWZZ:Main System Microcomputer (IX0225AW) (1/2)

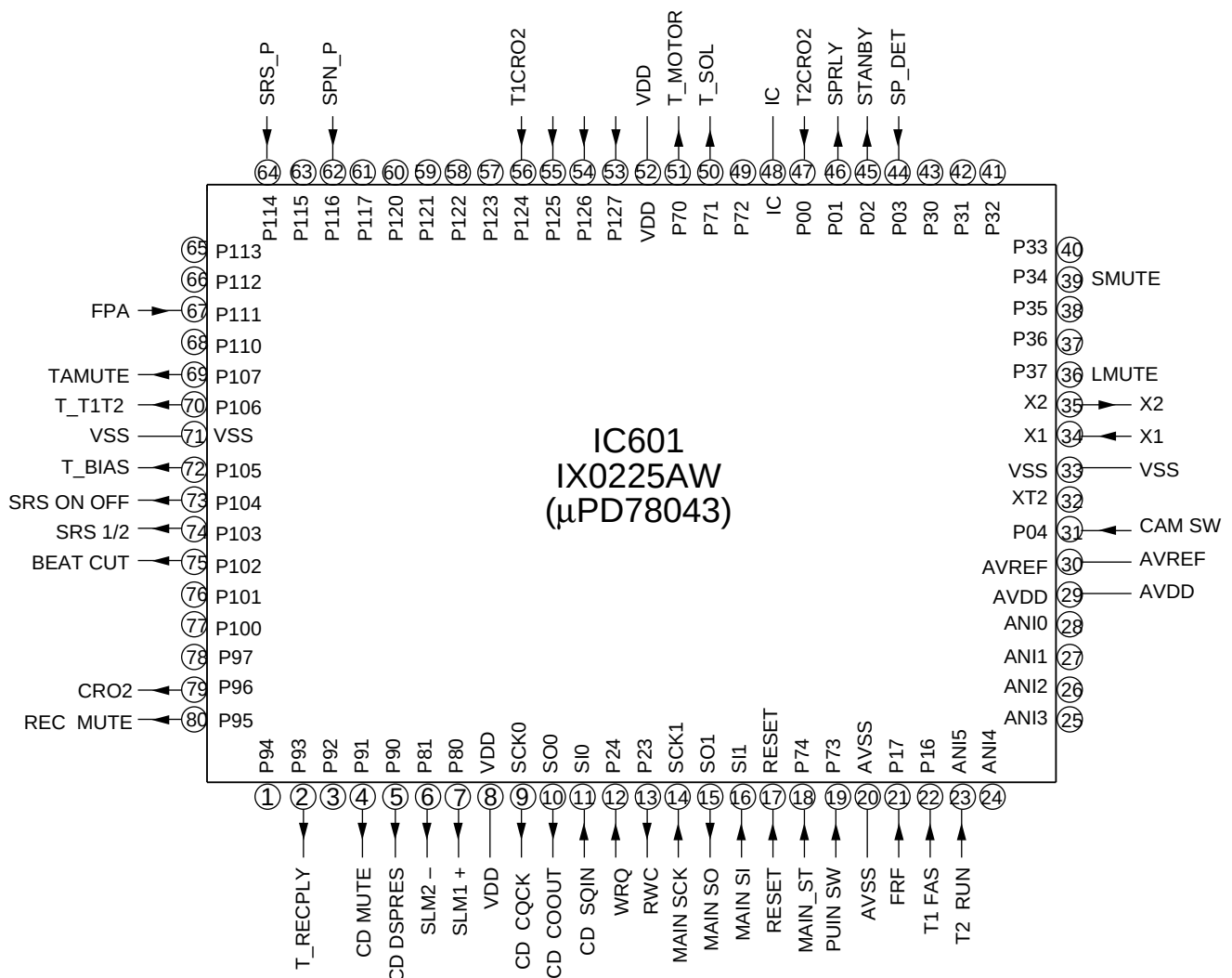
Pin No.	Port Name	Terminal Name	Input/Output	Function
1*	P94		Output	Not used OUT:H OPEN
2	P93	T_RECPLY	Output	REC/P.B Selection
3*	P92		Output	Not used OUT:H OPEN
4*	P91	MUT	Output	CD Mute Contorol
5	P90	DSPRES	Output	Reset Output For CD Display
6	P81	SLM2	Output	CD Slide Motor–
7	P80	SLM1	Output	CD Slide Motor+
8	VDD	VDD	—	Power Terminal
9	SCK0	CD CQCK	Output	Clock Output For CD
10	SO0	CD COOUT	Output	Data Output For CD
11	SI0	CD SQIN	Input	Data Input From CD
12	P24	WRQ	Input	CD WRQ
13	P23	RWC	Output	CD WRC
14	SCK1	MAIN SCK	Input	System Microcomputer Clock
15	SO1	MAIN SO	Output	System Microcomputer Data Output
16	SI1	MAIN SI	Input	System Microcomputer Data Input
17	RESET	RESET	Input	Reset
18	P74	MAIN_ST	Input	System Microcomputer Stove Input
19	P73	PUINSW	Input	CD PUIN–SW
20	AVSS	AVSS	—	Analog Ground
21	P17	FRF	Input	Detecting of CD RF Level
22	P16	T1FAS	Input	TAPE1 Full Auto Stop, Pulse Input
23	ANI5	T2 RUN	Input	TAPE2 RUN Pulse Input
24-28	ANI4-0		Output	Not used OUT:H OPEN
29	AVDD	AVDD	—	Analog VDD
30	AVREF	AVREF	—	Analog Ref Potential
31	P04	CAM SW	Input	TAPE CAM–SW
32*	XT2		Output	Not used OPEN
33	VSS	VSS	—	GND Potential
34	X1	X1	Input	Main Clock 4.19MHz
35	X2	X2	Output	Main Clock 4.19MHz
36*	P37	LMUTE	Output	LINE MUTE
37*-38*	P36-35		Output	Not used OUT:H OPEN
39*	P34	SMUTE	Output	System Mute
40*	P33		Output	Not used OUT:H OPEN
41*-43*	P32-30		Output	Not used OUT:L OPEN
44	P03	SP_DET	Input	Detecting of SP Output Error
45	P02	STANBY	Output	Setting Power Control
46*	P01	SPRLY	Output	SP Output Relay Control
47	P00	T2CRO2	Input	TAPE2 Detecting of Chrome Tape
48	IC	IC		Internally Connected
49*	P72		Output	Not used OUT:L OPEN
50	P71	T_SOL	Output	TAPE Solenoid Control
51	P70	T_MOTOR	Output	TAPE Motor Control
52	VDD	VDD		+Power Supply
53	P127		Input	CD TRAY Open/Close SW
54	P126		Input	CD TRAY Disc No,SW
55	P125		Input	CD Mechanizm Detecting of Up/Down chucking
56	P124	T1CRO2	Input	TAPE1 Detecting of CrO2 TAPE
57*-60*	P123-120		Output	Not used OUT:H OPEN
61*	P117		Output	Not used OUT:H OPEN
62*	P116	SPN_P	Input	Tuner Span Selection

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC601 RH-iX0225AWZZ:Main System Microcomputer (IX0225AW) (1/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
63*	P115		Output	Not used OUT:H OPEN
64	P114	SRS_P	Input	SRS exists or not exist
65*-66*	P113-112		Output	Not used OUT:H OPEN
67	P111	FPA	Input	TAPE2 A Side Proof Roof
68*	P110		Output	Not used OUT:H OPEN
69*	P107	TAMUTE	Output	TAPE Playback Mute
70	P106	T_T1T2	Output	T1/T2 Selection
71	VSS	VSS	—	GND Potential
72	P105	T_BIAS	Output	Recording Bias Control
73*	P104	SRS ON OFF	Output	SRS ON/OFF Control
74*	P103	SRS 1/2	Output	SRS Mode Control
75*	P102	BEAT CUT	Input	TAPE Beat Cut Control
76*-77*	P101-100		Output	Not used OUT:H OPEN
78*	P97		Input	Not used OUT:H OPEN
79*	P96	CRO2	Output	TAPE Playback EQ Selection
80	P95	RECMUTE	Output	Tape Recording Mute

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

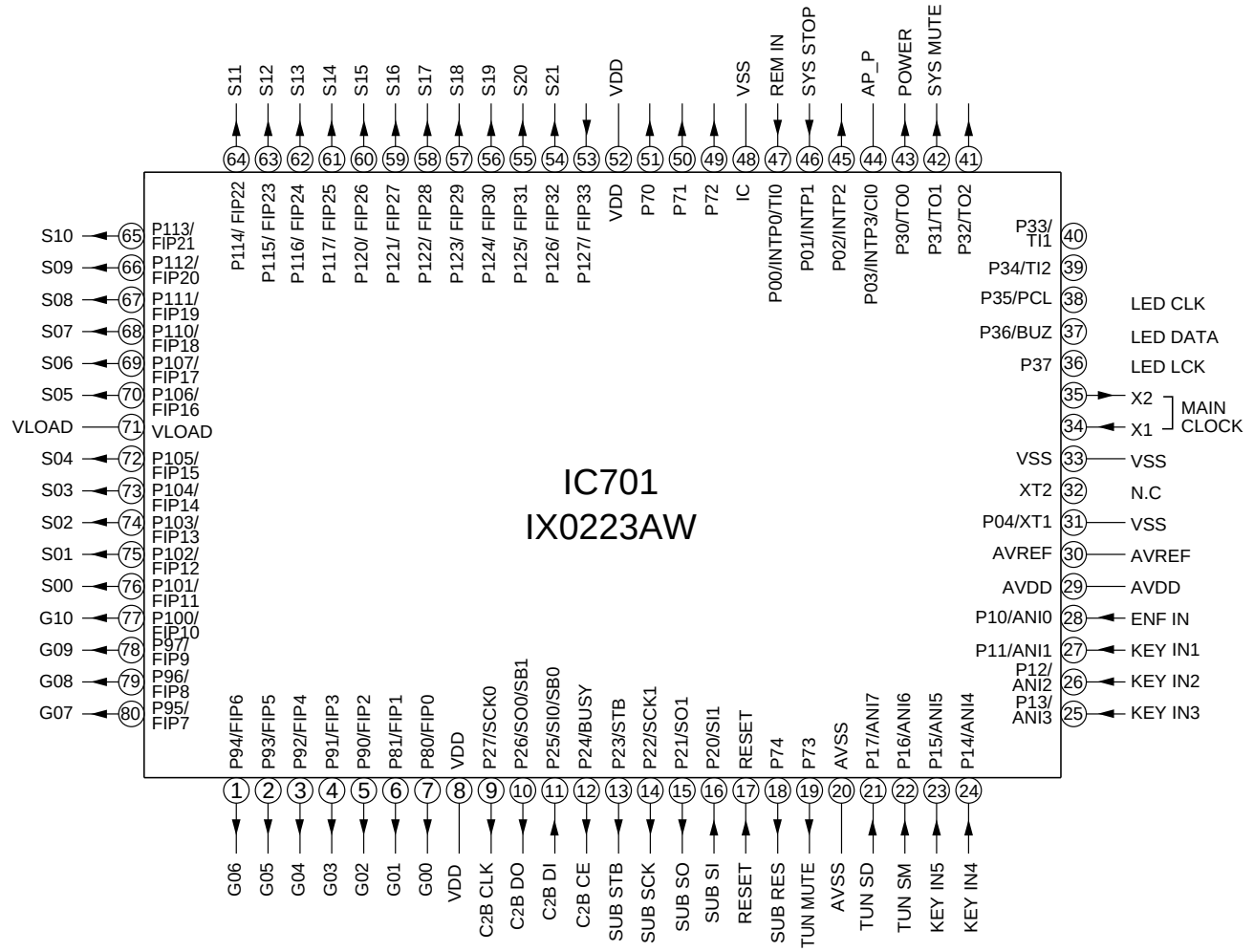
**Figure 47 BLOCK DIAGRAM OF IC**

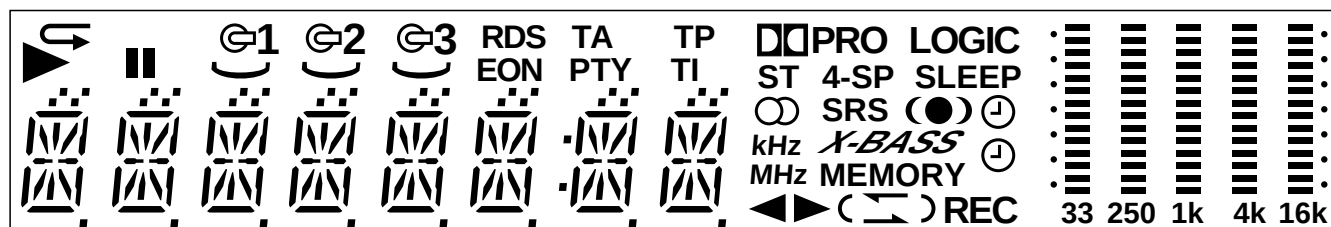
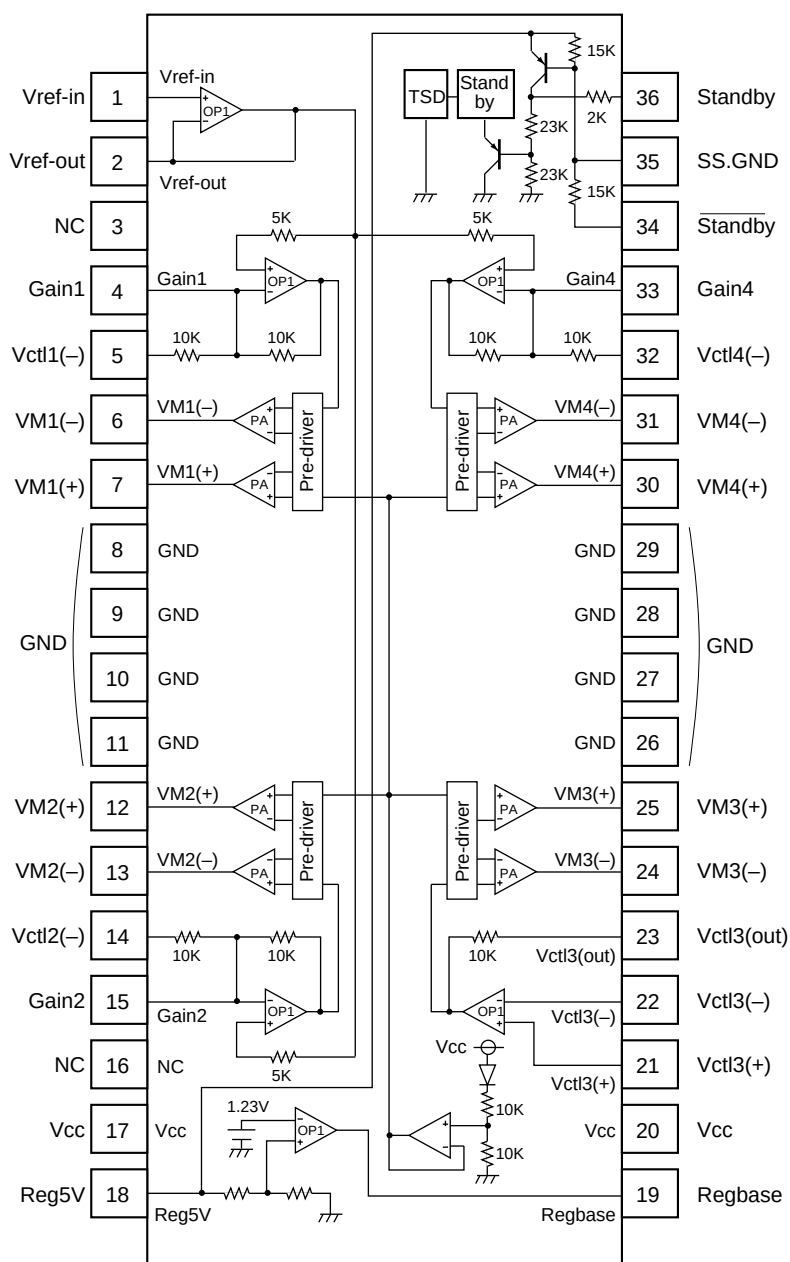
CD-C421H / C411H

IC701 RH-iX0223AWZZ: System Microcomputer (IX0223AW) (1/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
1-7	FIP6-0	G06-00	Output	—
8	VDD	VDD	—	+Power Supply
9	SCK0	C2B CLK	Output	C2B Serial Clock Output
10	SO0	C2B DO	Output	C2B Serial Data Output
11	SI0	C2B DI	Input	C2B Serial Data Input
12	P24	C2B CE	Output	C2B Serial CE Output
13	P23	SUB STB	Output	Serial Stove Output For CD/TAPE Microcomputer
14	SCK1	SUB SCK	Output	Serial Clock Output For CD/TAPE Microcomputer
15	SO1	SUB SO	Output	Serial Data Output For CD/TAPE Microcomputer
16	SI1	SUB SI	Input	Serial Data Input For CD/TAPE Microcomputer
17	RESET	RESET	Input	Reset Input
18	P74	SUB RES	Output	Reset Output For CD/TAPE Microcomputer
19	P73	TUN MUTE	Output	Tuner Tun Mute Output
20	AVSS	AVSS	—	A/D Converter Analog Power
21	P17	TUN SD	Input	
22	ANI6	TUN SM	Input	Tuner Signal Meter Input
23	ANI5	KEY IN5	Input	Key input 37 to 45
24	ANI4	KEY IN4	Input	Key input 28 to 36
25	ANI3	KEY IN3	Input	Key input 19 to 27
26	ANI2	KEY IN2	Input	Key input 10 to 18
27	ANI1	KEY IN1	Input	Key input 1 to 9
28	ANI0	ENF IN	Input	Tuner Initial setting input
29	AVDD	AVDD	—	A/D Converter Analog +Power
30	AVREF	AVREF	—	A/D Converter Reference Input
31	XT1	VSS	Input	Sub-clock Input Connect with VSS
32*	XT2	N.C	Output	Sub-clock Output OPEN
33	VSS	VSS	—	Connect with GND
34	X1	X1	Input	Main Clock 4.19MHz
35	X2	X2	Output	Main Clock 4.19NHz
36*	P37	LED LCK	Output	LED IC Serial Clock Output BU2092 LCK
37*	P36	LED DATA	Output	LED IC Serial Data Output BU2092 Data
38*	P35	LED CLK	Output	LED IC Serial Clock Output BU2092 CLK
39*	P34		Output	Not used OUT:L OPEN
40*	P33		Output	Not used OUT:L OPEN
41*	P32		Output	Not used OUT:L OPEN
42*	P31	SYS MUTE	Output	System Mute Output
43	P30	POWER	Output	Power Output
44	P03/INTP3	AP_P	—	H: CD-C451 Mode LC75396 L: CD-C431 Mode LC75394
45*	P02	**	Output	Not used OUT:L OPEN
46	INTP1	SYS STOP	Input	Power Failure Input
47	INTP0	REM IN	Input	Remote Control Input
48	IC	VSS	—	Connect with GND
49*	P72	**	Output	Not used OUT:L OPEN
50*	P71	**	Output	Not used OUT:L OPEN
51*	P70	**	Output	Not used OUT:L OPEN
52	VDD	VDD	—	+Power Supply
53*	P127	**	Input	Not used OUT:H OPEN
54-70	FIP32-16	S21-05	Output	FL Display Segment Drive
71	VLOAD	VLOAD	—	FL Drive –Power, to be connected to –30V
72-76	FIP15-11	S04-00	Output	FL Display Segment Drive
77-80	FIP10-7	G10-07	Output	FL Display Grid Drive

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.





IC5 VHiM56748FP-1: Focus/Tracking/Spin/Slide Driver (M56748FP)

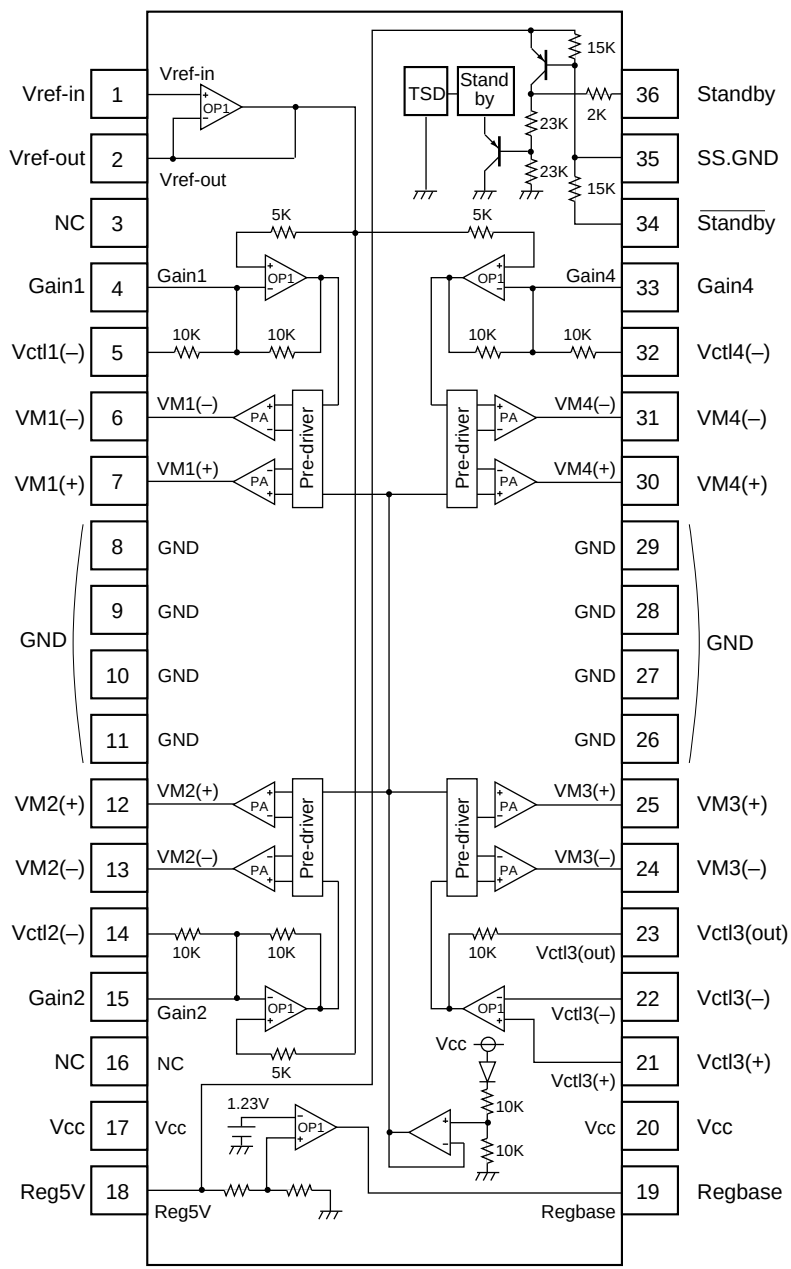


Figure 48-1 BLOCK DIAGRAM OF IC5

FL701 : VVKBJ549GK-/1 FL Display

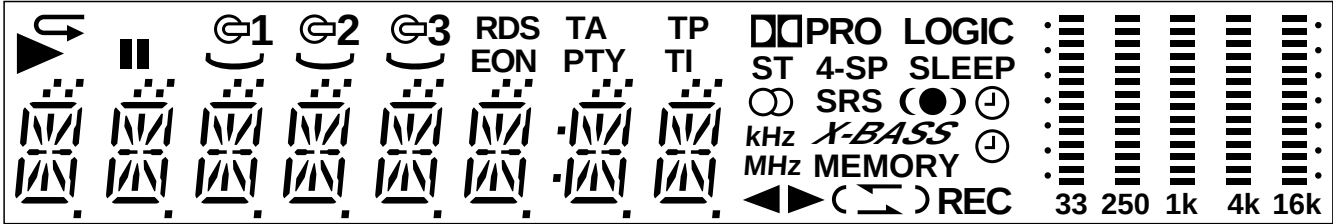


Figure 48-2 FL DISPLAY